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EDITORIAL.

Agricultural Exports of the Netherlands Indies.

The importance of the Netherlands Indies as an exporter of agricultural products is again emphasised by the figures given in the annual publication of the Department of Economic Affairs of that country, entitled The Export Crops of the Netherlands Indies in 1933, an abstract of which we publish in this number. Abstracts of previous publications in respect of the years from 1929 onwards have been published in the pages of this Journal. In order not to recapitulate information already published, the reader is advised to compare the present abstract with that published in the *Malayan Agricultural Journal* of February 1934, which deals with the year 1932 and includes many tables giving comparisons with previous years.

One is struck by the fact that although the Netherlands Indies maintains a very large population, the exports include a number of staple food crops produced in excess of local demand. The only important exception is rice, of which the imports into the Netherlands Indies are still very considerable. It is evident, however, that even in this case, the policy is to render the country self-supporting, and it is conceivable that in a few years the position may be reversed and the Netherlands Indies become an exporter of this product. The area under this crop has steadily increased in recent years—from 3,423,000 hectares in 1929 to 3,778,000 hectares in 1933, while the imports from foreign countries have steadily decreased—from 402,397 metric tons in 1929 to 260,431 metric tons in 1933.

The agricultural exports of the Netherlands Indies are of great importance to Malaya. According to Malayan statistics of imports, the value of animals, food and tobacco imported into Malaya from the Netherlands Indies in 1933 was $19,000,000 to which must be added Para rubber, exceeding $15,000,000 and other agricultural products valued at over $8,000,000.

Many of these products, including, of course, all the Para rubber, are re-exported, and the trade, chiefly centred in Singapore, which is concerned in many cases in grading and re-conditioning these products prior to re-export, is a most valuable one. When, however, due allowance is made for this trade,

there still remains a very large quantity of agricultural products of the Netherlands Indies imported into Malaya for local consumption.

The success of our neighbour in providing for domestic requirements and at the same time exporting a surplus, the value of which must be a gratifying source of income to her agricultural population, directs attention to the desirability of continued effort in Malaya to foster the many agricultural industries which are capable of providing our small-holders with money with which to supply themselves with those necessities and comforts of life that they are themselves unable to produce. The development of money crops in Malaya will go far towards keeping the small-holder from drifting to the towns and should result in establishing him on the land and maintaining him by the crops for which the country is suited and in the cultivation of which he is, by custom and experience, most fitted.

Rice Production in Malaya.

Inevitably, this subject of the agricultural policy in Malaya leads one's thoughts to the cultivation of padi, which should be the basis upon which the welfare of the majority of the inhabitants of Malaya depends. In the last number of this journal an account was given of the padi manurial experiments conducted by the Department of Agriculture in the season 1933-34. We round off our review of the present position of investigations on this subject by the inclusion in this number of two further articles on the subject—an account of the rice experiments in Malaya in the season 1933-34 and a statement of the production of rice in Malaya in the season just concluded, of imports during the year, and of prices ruling during the period.

The rice experimental work in Malaya is now conducted over a wide area and has as its object the testing of varieties to suit the conditions peculiar to different parts of the country, the improvement of varieties by selection, and work on the effects of different methods of cultivation.

It will be realised, therefore, that the aim of the work of the Department is to bring about an improvement in the yield per acre, leaving it largely to other organisations to bring about improvements which will render new land suitable for the cultivation of this crop. Padi planting has in the past proved unattractive to the Malays by reason of the fact that the work is not only laborious, but that the resultant crops were, in many cases disappointing. The efforts of the Department to improve yields have already attained a considerable measure of success, and one may confidently anticipate continued improvement in this direction for some years to come.

Our second article—Rice in Malaya 1934—shews that the padi planting season 1933-34 has been most satisfactory. The outstanding fact is that, while the area shews a decrease of 1,660 acres, the production of rice has increased by 12 per cent. to a total of 320,696 tons of rice. No one organisation can claim entire credit for this result—it has been achieved by the gift of a favourable season and by the concerted efforts of those departments, both ad-

ministrative and technical, that have constantly assisted and encouraged the cultivators. While one fears that the recent recovery in the price of rubber may result in difficulty in maintaining the area under padi, an encouraging feature of the position is that the cultivators themselves are more self-reliant and more inclined than formerly to adopt methods designed to improve the quality and quantity of the crop from the existing areas. The ultimate success of the present work, which aims at making improvements possible, rests with the cultivators themselves, and one can but hope that with the memory of the difficulties from which they are just emerging, and with the spread of education throughout the country, they may share our conviction of the importance of maintaining and increasing padi-planting throughout Malaya.

Original Articles.

RICE IN MALAYA IN 1934

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Favourable crops in rice-producing countries and the reduced purchasing power of Asiatics have been instrumental in reducing the average price of rice to a level which has no parallel in recent years. In the middle of the year prices touched an extremely low level, but later shewed a marked recovery.

Table I.
Average Price of Rice and Padi in Malaya 1934.

Month	Wholesale Prices of Rice Dollars per picul (133 lbs.)			Retail Prices of Rice Cents per gantang (gallon)			Price of Padi per picul at Government Rice Mill, Bagan Serai
	Siam No. 2 (ordinary)	Rangoon No. 1	Saigon No. 1 (long grain)	Singapore	Penang	Malacca	
January ...	2.91	2.72	2.65	23	28	24	1.50
February ...	3.06	2.50	2.60	22	26	24	1.40
March ...	2.82	2.47	2.62	23	26	24	1.40
April ...	2.54	2.42	2.57	23	25	24	1.40
May ...	2.60	2.42	2.50	23	25	23	1.40
June ...	2.66	2.50	2.60	21	25	23	1.25
July ...	2.78	2.77	2.82	22	24	23	1.25
August ...	3.13	3.16	3.17	23	24	23	1.50
September ...	3.39	3.30	3.30	26	25	26	1.50
October ...	3.14	3.15	3.05	26	25	24	1.50
November ...	2.96	2.85	2.92	24	25	24	1.50
December ...	2.95	2.86	2.95	22	20	22	1.50
Average for 1934	2.91	2.76	2.81	23	25	24	1.42
Average prices in 1933 ...	3.53	3.04	3.22	25	27	27	1.65

Imports and Exports.

The total imports of rice for the first eleven months of 1934 amounted to 562,301 tons being 18,569 tons more than for the corresponding period of 1933. Exports January to November 1934, inclusive, were 148,957 tons, an increase of 592 tons. Net imports for the first eleven months of 1934 were 413,344 tons, valued at $21,956,311, as compared with 395,367 tons, valued at $22,233,430 in the corresponding period of 1933. With improved trade conditions an increase in consumption was to be expected. The relatively low price of rice has also probably led to greater consumption. It is probable that the cost to Malaya of net imports of rice in 1934 will amount to $23,500,000 as as compared with an actual cost in 1933 of $24,404,242.

Table II.
Rice: Malayan Imports and Exports.

Year	Imports		Exports		Net Imports	
	Tons	Value $	Tons	Value $	Tons	Value $
1029	785,558	95,461,036	233,897	28,031,407	551,661	67,429,629
1930	800,443	87,666,723	208,688	23,361,561	591,755	64,305,162
1931	691.112	48,458,102	175,385	13,453,189	515,727	35,004,913
1932	592,145	39,729,242	182,515	12,605,402	409,630	27.123,840
1933	592,912	33,846,158	159,746	9,493,291	433,166	24,352,867
1934	610,000*	32,100,000*	165,000*	8,600,000*	445,000*	23,500,000*

* Estimated.

Malayan Production of Rice.

Heavy padi crops have been harvested throughout Malaya, with the exception of Kelantan in which State extensive damage was occasioned by floods. The following table gives acreage under padi and the crop in terms of rice. Comparison of these figures with a similar table published in this Journal in December 1933 shews small differences throughout of the yield of rice. This is accounted for by the fact that whereas the conversion figure was previously taken as 686 gantangs of padi equal 1 ton rice, it is now considered that under local conditions a more accurate and convenient figure is 700 gantangs to 1 ton of rice.

Table III.
Area of Rice Land Planted in Malaya and Yield of Rice.

Season	F.M.S.		S.S.		U.M.S.		Total	
	Area acres	Production rice tons	Area acres	Production rice tons	Area acres	Production rice tons	Area acres	Production rice tons
1929—30	174,466	47,753	67,005	25,142	415,727	75,937	657,198	148,832
1930—31	178,930	55,264	67,350	38,053	461,460	161,561	707,740	254,878
1931—32	194,580	64,371	67,980	37,701	462,420	179,503	724,980	281,575
1932—33	214,160	72,625	70,530	34,300	482,220	178,448	766,910	285,373
1933—34	195,690	75,006	70,550	42,034	499,010	203,656	765,250	320,696*

(Yield estimated on a basis of 700 gantangs padi = 1 ton rice).

The total yield is thus a record and exceeds the record figure for the previous season by 12 per cent.

Planted Area.

The total area planted with padi in the season 1933-34 was slightly less than the previous year, but whereas in 1932-33 there were 674,920 acres under "wet" cultivation system and 91,990 acreas under the "dry" system, in the season 1933-34 the "wet" cultivation had increased by 16,190 acres, and the "dry" cultivation had decreased by 17,850 acres. This change over from the dry to the wet system is an important factor and partly accounts for the increased production.

Yields of Padi.

Favourable weather, the more extended use of improved seed, better water control and more systematic hunting of rats are all factors which have resulted in the improved results.

The following table gives details of the area and yield of padi in recent years.

Whereas the area planted shewed no increase over that of the previous season, the yield was 24,726,000 gantangs more, giving an all-over yield per acre at the rate of 293 gantangs as compared with 260 gantangs in the previous season.*

* Owing to local difficulties, the statistics of areas under padi and especially of yields should be treated as approximations. Improvements in the methods of collecting such data have been effected in recent years, but such improvements render comparison with previous years liable to misleading conclusions.

Table IV.
Areas and Yields of Padi in Malaya.

Area	Acres	Gantangs	Yield per Acre
1922	644,200	140,727,000	218
1923	657,380	156,411,000	238
1924	651,930	149,152,000	229
1925	656,080	159,135,000	243
1926	653,900	120,001,000	184
1927	649,690	128,374,000	198
1928	663,070	135,127,000	204
1929	687,060	126,229,000	184
1930	657,200	106,784,000	162
1931	707,740	175,867,000	248
1932	724,980	197,103,000	272
1933	766,910	199,761,000	260
1934	765,250	224,487,000	293

In the Federated Malay States the area under wet padi decreased by 5,860 acres and under dry padi by 12,610 acres. The yield, however, increased by 4,165,000 gantangs of wet padi and decreased by 2,498,000 gantangs of dry padi, giving a net increase in 1933-34 of 1,667,000 gantangs. The yield per acre of wet padi was 282 gantangs as compared with 251 gantangs in the previous season and 245 gantangs in the 1931-32 season.

The area under padi in the Straits Settlements in the season 1933-34 was about the same as in the previous season. The yields, however, were extremely good, especially in the large area of Province Wellesley, where the production of wet padi increased by 3,549,000 gantangs, an average of 435 gantangs per acre, compared with 324 gantangs in the previous season. In Malacca, the average yield per acre was 383 gantangs as compared with 348 gantangs in 1933. The Penang area, although only a little over 4,000 acres, gave a record yield of 600 gantangs per acre.

In the Unfederated Malay States, Kedah, which contains one-third of the total area under "wet padi in Malaya, gave a crop of "wet" padi of 392 gantangs per acre, as against 340 gantangs per acre in 1933. The area under "wet" padi also increased by 19,450 acres.

Table V.
Area of Land Planted with Padi and Yields, Malaya, Season 1933—34.

State or Territory	Wet		Dry		Total	
	Acres	Gantangs	Acres	Gantangs	Acres	Gantangs
Perak ...	90,570	28,142,000	8,660	741,000	99,230	28,883,000
Selangor ...	18,750	3,965,000	2,660	220,000	21,410	4,185,000
N. Sembilan ...	34,360	11,586,000	670	69,000	35,030	11,655,000
Pahang ...	37,710	7,562,000	2,310	219,000	40,020	7,781,000
Total F.M.S. ...	181,390	51,255,000	14,300	1,249,000	195,690	52,504,000
P. Wellesley ...	32,670	14,216,000	800	227,000	33,470	14,443,000
Dindings ...	460	65,000	120	15,000	580	80,000
Malacca ...	32,260	12,357,000	nil	nil	32,260	12,357,000
Penang ...	4,240	2,544,000	nil	nil	4,240	2,544,000
Total S.S. ...	69,630	29,182,000	920	242,000	70,550	29,424,000
Johore ...	17,040	1,838,000	6,780	602,000	23,820	2,440,000
Kedah ...	238,460	93,117,000	5,320	903,000	243,780	94,020,000
Perlis ...	41,590	17,268,000	nil	nil	41,590	17,268,000
Kelantan ...	112,550	18,414,000	35,950	4,983,000	148,500	23,397,000
Trengganu ...	30,450	4,024,000	10,870	1,410,000	41,320	5,434,000
Total U.M.S. ...	440,090	134,661,000	58,920	7,898,000	499,010	142,559,000
Total Malaya ...	691,110	215,098,000	74,140	9,389,000	765,250	224,487,000

The next largest area in Malaya—Kelantan—experienced unfavourable weather conditions which resulted in widespread destruction of the crop. Consequently, the yield per acre of "wet" padi was only 163 gantangs, as compared with 222 gantangs per acre in 1933.

Yields in Perlis were good at 392 gantangs of "wet" padi per acre as compared with 260 gantangs in 1933.

The yield of "wet" padi per acre for the season in the Unfederated Malay States was 306 gantangs and of "dry" padi 134 gantangs as compared with 276 and 147 gantangs respectively in the season 1932-33.

The yields per acre for Malaya in the season 1933-34 were "wet" padi 311 gantangs and dry padi 127 gantangs, as compared with 276 gantangs and 146 gantangs respectively in 1932-33 season.

Consumption compared with Production.

The following table gives a comparison of imports, production and consumption, from which it is seen that in spite of an increase in consumption during the past three years of nearly 40,000 tons, local production has been maintained at 40 per cent. of consumption. With the improvement in trade conditions, it cannot be expected that this ratio can be maintained. Consumption is bound to increase still further, and there may be difficulty in some districts in maintaining the planted area in view of the attraction which rubber tapping has for the Malay small-holder.

Table VI.

Malayan Production of Rice in Relation to Net Imports and Consumption, 1929—1934.

	1929	1930	1931	1932	1933	1934
Net imports ...	551,661	591,755	516,832	409,000	433,166	485,000
Production (tons) ...	180,328	148,832	254,878	281,575	285,373	320,696
Consumption (tons) ...	731,989	740,587	771,700	690,575	718,539	805,696
Percentage of production to net imports ...	33	25	49	69	66	66
Percentage of production to consumption ...	25	21	33	40	40	40

Acknowledgment.

The estimates of acreage and yields of padi in Malaya in 1934 were made by officers of the Field Branch of the Department of Agriculture in collaboration with the Land Officers

RICE EXPERIMENTS IN MALAYA 1933-1934

Selection, Varietal and Minor Cultural Trials

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Introduction.

The information contained in this article is the outcome of close collaboration between the Field and Research Branches of the Department of Agriculture, and is compiled from the reports and records of Field Officers in charge of the various experimental centres throughout Malaya.

During the season under review, experimental work on rice has been undertaken on five Rice Experiment Stations, and twenty-three Test Plots throughout Malaya, the distribution of which is given in Table I.

Table I.

Distribution of Rice Experiment Stations and Test Plots.

Name of Station or Test Plot	State	Locality
Titi Serong Experiment Station	Perak	District of Krian
Talang Experiment Station	„	„ „ Kuala Kangsar
Kuala Kurau Test Plot	„	„ „ Krian
Selinsing Test Plot	„	„ „ „
Briah Test Plot	„	„ „ „
Bukit Gantang Test Plot	„	„ „ Larut
Lenggong Test Plot	„	„ „ Upper Perak
Bruas Test Plot	„	Sub-district of Bruas
Telok Chengai Experiment Station	Kedah	
Langgar Test Plot	„	Kota Star North
Jitra Test Plot	„	Kubang Pasu
Sala Kanan Test Plot	„	Kota Star South
Rantau Panjang Test Plot	„	Kuala Muda
Pulai Test Plot	„	Baling
Dong Test Plot	Pahang	District of Raub
Temerloh Test Plot	„	„ „ Temerloh
Pekan Test Plot	„	„ „ Pekan
Sungei Blat Test Plot	„	„ „ Kuantan
Central Experiment Station	Kelantan	Kota Bahru
Pasir Puteh Test Plot	„	
Kajang Test Plot	Selangor	District of Ulu Langat
Kuang Test Plot	„	„ „ Ulu Selangor
Kendong Test Plot	Negri Sembilan	„ „ Tampin
Jelebu Test Plot	„	„ „ Jelebu
Bukit Merah Test Plot	Province Wellesley	„ „ Central „ „ South West
Glugor Test Plot	Penang	
Sungei Tontong Test Plot	Dindings	
Pulau Gadong Experiment Station	Malacca	District of Central

The selection and varietal work with which this article deals principally is essentially associated with the progressive economic improvement of rice returns per unit of area, by the critical selection of types having desirable characteristics, and by the competitive trials of similar selections to determine ultimate superiority. The critical work in this connexion is undertaken at the Rice Experiment Stations. Proved selections from Experiment Stations are further tested for yield capacity against existing strains in the Test Plots, which are widely distributed throughout the rice-producing areas of the country to determine the environmental compatability of the fresh introductions. Apart from testing the suitability under local conditions of selected strains, the Test Plots serve the useful purpose of demonstrating to cultivators the performances of a large number of padi types of proved utility, and rendering seed supplies of these available for distribution.

The season 1933-34 was very favourable for the growth and development of the rice crop and highly satisfactory yields were obtained from the majority of producing centres.

A feature of the season in so far as experimental work is concerned has been the extensive change-over to a standard experimental lay-out in the so-called Latin Square arrangement, the advantages of which, from a point of view of analysis, is fully dealt with in the *Malayan Agricultural Journal*, Vol. XII, June, 1934.

The reports of investigations undertaken in the Unfederated Malay States are included by the courtesy of the various Governments concerned.

Perak.

During the season 1933-34, padi experiments in Perak were conducted at two Experiment Stations and six Test Plots.

Comparative yield trials of pure strains were conducted on Stations and Test Plots throughout the State. In all cases the lay-out was a four or five-way Latin Square, each plot being 1/120th acre in area, arranged in accordance with a standard formula.

Pure Line Selection.

Titi Serong Experiment Station.

Thirty-one pure strains were under cultivation, each strain being accommodated in three rows, 18 ins. apart with the plants 12 ins. apart in the rows. Ten of the strains were of the Seraup type, nine were Radins, and the remainder, with the exception of one Pahit strain, short-term strains having maturation periods of 5½ months and less.

Selection work was continued on two varieties, namely, Mayang Ebos and Bujang. Three years ear-to-row plantings of the former variety indicate that Mayang Ebos 203 is the most superior of the selections of that variety, although this is not entirely confirmed by Latin Square trials carried out during

the season at Titi Serong and elsewhere in Perak. Of the Krian variety. Bujang, six lines were planted during the season under review. Differences as between the strains over a period of three years are but slight, although 213 appears to exhibit superiority.

Foundation stocks—These comprise a number of single plant selections originating in the various States of the Federation, and in Kedah, Perlis and Kelantan making a total of fifty-three lines. The long term strains F.S. 48 and 55 (selections of Mayang Kuning from Kuala Kangsar and Province Wellesley respectively) F.S. 39 (a selection of Seraup Besar from Province Wellesley) and F.S. 42 (a Machang selection of unknown origin) have given good results over a period of three years, as also has the five months type F.S. 1 (a Serendah selection from Kajang).

For the current season, pure strains will be reduced to sixteen lines only, and will comprise stocks having a maturation period of not less than six months: shorter term varieties of padi will be transferred to Talang Station where conditions are more suited to their growth.

Selection work will be continued during the current season and will include in addition to the lines already retained, further critical observations on lines which have undergone preliminary selection in Perak Test Plots, and preliminary selections of lines obtained in the field.

At Bukit Gantang Test Plot preliminary selection on standard lines was made of three high-yielding strains obtained from Batu Kurau. A variety known as Padi Chantek, which has been collected at Selama, will undergo preliminary selection during the current season.

Varietal Trials.

The term varietal trial is used to indicate comparative yield trials between pure strains. A standard, in the shape of a local unselected variety, or a pure strain, is utilised where such is considered desirable.

Details of results will be found in Table II.

Titi Serong Experiment Station.

The season throughout was very favourable for the successful cultivation of padi. Water supplies were adequate and little damage was sustained as a result of pest attacks. The yields recorded were the best for some years. The second transplantings of a number of the short term strains were caught by floods and considerable damage resulted. As this has occurred on many previous occasions it has been decided to transfer to Talang Station all strains which have a maturation period of less than six months.

Varietal trials comprised three four-way and seven five-way Latin Squares.

Ten Seraup strains were tested in three four-way Latin Squares H, J & K, with Seraup Kechil 36 as the standard. In square H, Seraup Kechil 6 was significantly superior to Seraup Kechil 36 but not to Seraup Kechil 1 and 68,

In square J, Seraup Kechil 48 was significantly superior to Seraup Kechil 36 and 52 and Seraup Besar 15. In square K, Seraup Kechil 146 was significantly superior to Seraup Kechil 20 but not to Seraup Kechil 36 and 371. For the coming season, Seraup Kechil 1 and 20 have been dropped from the trials and Seraup Kechil 48 has been selected as the standard.

Nine Radin strains were under test in two five-way Latin Squares A & B with Radin 4 as the standard. In square A, Radin 16 was significantly better than Radin 2 but not to Radin 4, 7 and 13. In square B, Radin 11 was significantly superior to Radin 4 and 35 but not to Radin 1 and 12. For the coming season Radin 12 and 35 have been dropped from the trials.

Five Mayang Ebos strains were tested in a five-way Latin Square D, the results indicating that Mayang Ebos 203 was significantly superior to Mayang Ebos 207 but not to Mayang Ebos 202, 208 and 209. For the coming season Mayang Ebos 210 will replace Mayang Ebos 207 in the trials, as the former unexpectedly did well at the Lenggong Test Plot last season.

Three Serendahs and two Nachins were tested against each other in a five-way Latin Square C. Serendah 248 was significantly superior to Serendah 875 and N. 27 but not to Serendah 11 and Nachin (Jambai) 756.

Three short-term Serendah selections from Kajang were tested against each other and against two Milek Puteh strains in a five-way Latin Square E. F.S. 1 proved significantly better than F.S. 5 and 9 and also to Milek Puteh 149.

Two five-way Latin Squares F & G were made up of promising medium and long-term Foundation Stocks respectively. In square F, F.S. 34 was significantly superior to F.S. 64, 67 and 28 but not to F.S. 36. In square G, F.S. 48 was significantly superior to F.S. 14 but not to F.S. 55, 71 and 39.

The programme for the current season, 1934-35, in respect of Seraup, Radin and Mayang Ebos strains has already been mentioned. Additional trials to be made are as follows :-

(i) A five-way Latin Square comprising the five best Kelantan strains.
(ii) A five-way Latin Square with the five best Bujang strains.
(iii) A five-way Latin Square with the four most promising long term Foundation Stocks tested against a standard Seraup.

Kuala Kurau Test Plot.

An excellent growing season was experienced, but a series of storms during mid-January caused extensive lodging to the maturing padi, the Siam and Nachin types being particularly affected.

Varietal trials at this Test Plot consisted of two five and one four-way Latin Squares.

Square A comprised three Seraups and two late maturing Radins. Seraup 48 narrowly fell short of significance over Seraup Besar 15, but was definitely

superior to Radin 4 and 13. Seraup Kechil 36 was significantly superior to the Radins, but not to the Seraup Besar 15.

Square B was made up of pure strains having maturation periods of from 5½ to 6 months in duration. Radin 2 was significantly superior to Siam 29, Nachin 66 and Mayang Ebos 203, but not to Siam 76. The latter was significantly superior to N. 66 and M.E. 203 but just missed significance over Siam 29.

Square C was made up of four short-term Radin Siak strains from Pulau Gadong Experiment Station, Malacca. Radin Siak 18 was significantly better than Radin Siak 24, but not to Radin Siak 17 and 7.

For the coming season, the Seraups only are to be retained. The results of the past two seasons have conclusively demonstrated that of the pure strains tested, the Seraups show an overwhelming superiority as regards yields and general adaptability to local conditions. Seraup Kechil 36 and 48 will be tested against two of the best local varieties, the latter to be chosen by the Kuala Kurau Mukim Advisory Committee. Two other Seraups which have done well at Titi Serong Experiment Station of late years, namely Seraup Kechil 146 and 371, will be tested at Kuala Kurau during the current season.

Selinsing Padi Test Plot.

This Plot experienced satisfactory growing conditions throughout the season. Water supply was adequate and major pests of the crop were not greatly in evidence. Some damage to nurseries was occasioned by attacks of the caseworm *Nymphula depunctalis*. Yields were comparable to those recorded for the season 1932-33.

The varietal trials at this Station comprised one four-way and one five-way Latin Square.

Square A was a composite one comprising one early maturing Radin, one Serendah, one Radin Siak and one Nachin strain. Serendah 824 proved significantly superior to Radin Siak 17 but not to Radin 2 and Nachin 8.

Square B was made up of three Nachin and two Siam types. Nachin 10 and Siam 29 were significantly better than Siam 76 and Nachin 27, but just missed significance over Nachin 66.

For the current season Nachin 10, Siam 29, Mayang Ebos 203, Siam 76 and Nachin 66 will undergo further comparative tests. In view of the growing popularity of Seraups and other long-term strains in the deeper areas of the mukims of Selinsing and Gunong Semanggol, together with the anticipation of more adequate water supplies to these areas, Seraup strains will be introduced for the purpose of critical observations.

Briah Test Plot.

The main feature of the season at this Plot was the severe flooding of the nurseries, the majority of the varieties being inundated on at least three

occasions for periods of from 24 and 48 hours. The varietal trial area remained relatively free from pest damage. Yields were below those recorded for the 1932-33 season.

The varietal trials comprised two four-way Latin Squares, in which a slight deviation from the standard lay-out was necessitated.

Square A was made up of two Siams, a Nachin and an early-maturing Radin strain. Siam 29 was significantly superior to Siam 76 and Radin 2, but just fell short of significance over Nachin 66.

Square B comprised two Serendahs, a Radin Siak and a Mayang Ebos. Mayang Ebos 203 was significantly superior to Serendah 824 and overwhelmingly so to Radin Siak 17 and Serendah 875.

The strains Mayang Ebos 203 and Siam 29 have shown themselves to be definitely superior in two consecutive seasons to the other strains. They will be finally tested during the coming sason against the strains Siam 76 and Nachin 66, which were insufficiently acclimatised last season, and against the best local variety, the latter to be chosen by the Mukim Advisory Committee.

Bukit Gantang Test Plot.

Conditions at this Plot were satisfactory for sowing and planting, but shortage of water occurred soon after planting and this condition continued throughout September, which was an exceptionally dry month, and into early October. Later in that month continuous rain caused the plants to make renewed growth. February was a very wet month and harvesting was carried out under unsatisfactory conditions. As a result, the crop ripened irregularly and efficient drying of the reaped padi was difficult.

The varietal trials consisted of four four-way Latin Squares. Square A comprised two Siam, one Nachin and one Mayang Ebos strain. Siam 76 was significantly superior to Siam 29 and Nachin 66, but not to Mayang Ebos 203. Siam 29 lodged badly, Siam 76 and Nachin 66 to a less extent, while Mayang Ebos exhibited little tendency to this weakness.

Square B was made up of short-term Radin Siak strains from Pulau Gadong Experiment Station, Malacca. Radin Siak 18 was significantly superior to Radin Siak 24, but not to Radin Siak 7 and 17. Of these four strains Radin Siak 18 showed the least tendency to lodge.

Square C consisted of four Radin strains. Radin 7 just attained significant superiority over Radin 4 and was very definitely superior to Radin 2 and 13. This is the second consecutive season in which Radin 7 has exhibited comparatively high yields, though last season it shared this distinction with Radin 2 which is now at the bottom of the list in the trials described.

Square D comprised four long season Seraup strains, Seraup Kechil 36, Seraup Kechil 48, Seraup Kechil 68 and Seraup Besar 15. Differences in yields were obviously too slight to warrant statistical analysis.

Talang Experiment Station.

As at Bukit Gantang, the crop at this Station suffered a set-back caused by exceptionally dry weather in September. Late rains caused irregular ripening of the crop, but harvesting was completed under better conditions than obtained at Bukit Gantang.

Varietal trials consisted of one five-way and two four-way Latin Squares.

Square A comprised two Siam and two Nachin strains. Siam 29 was significantly better than Nachin 10 and Nachin 66, but not superior to Siam 76.

Square B consisted of two Radin strains, one Mayang Ebos, one Nachin and one Serendah. Mayang Ebos 203 proved significantly superior to R.2, R.4 and Serendah 824, but just failed to show significance over Nachin 756.

Square C was a repetition of the four standard Pulau Gadong Radin Siak strains. Here Radin Siak 17 and Radin Siak 24 were obviously significantly better than Radin Siak 7 and Radin Siak 18 and no statistical analysis was undertaken.

Bruas Test Plot.

Weather conditions were fairly good and water supplies adequate throughout the season. Yields continued to show the irregularity noted last season owing to soil variations caused by recent levelling and stump removals.

The varietal trials consisted of three four-way Latin Squares.

Square A contained four Seraup strains, Seraup Kechil 1, Seraup Besar 15, Seraup Kechil 36 and Seraup Kechil 48; square B, Radin 2, 4, 13 and Serendah 824, and square C Siam 29, Siam 76, Nachin 66 and Mayang Ebos 203. Only the results from square A were statistically analysed and showed an abnormally large standard deviation. Square B was considered unreliable through interference from an affection not yet fully determined but locally known as *penyakit merah*. The results from square C obviously exhibited no significant differences.

Lenggong Test Plot.

Conditions generally on this Plot were distinctly unfavourable for satisfactory growth and development. Heavy flooding was experienced during October and again a month later. Difficulties in connexion with contract work resulted in weeding receiving inadequate attention and harvesting being delayed. There was consequently much loss of grain from shattering, and lodging of the crop was general. Yields were much lower than usual for this Plot, which generally produces exceptionally heavy crops.

Three four-way Latin Squares were laid down comprising the following series: (*a*) Seraup; (*b*) Siam, Nachin, Radin; (*c*) Mayang Ebos. For the reasons previously explained, results were not statistically analysed, but the Mayang Ebos strains produced the heaviest yield.

Table II.

Varietal Trials in Perak.
Maturation Periods and Mean Yields of Padi.

Maturation Periods (M.P.) of Strains in days; Mean Yields (M.Y.) in pounds per 1/120th acre; General Mean (G.M.) in pounds; Standard Deviation (S.D.) in pounds; and Minimum Significant Difierence (M.S.D.) in pounds.

Station.		Square	Strains					Square	Strains				
			Radin 4.	Radin 2.	Radin 7.	Radin 13.	Radin 16.		Radin 4.	Radin 1.	Radin 11.	Radin 12.	Radin 35.
Titi Serong.	M.P.	A.	216	195	216	218	206	B.	225	195	220	220	195
	M.Y.		21.6	17.1	23.3	22.8	23.6		21.6	22.7	23.6	22.4	20.1
G.M = 21.7.,		S.D. =	1.9.,	M.S.D. = 2.8.				G.M. = 22.1.,		S.D. =	1.2.,	M.S.D. = 1.7.	
			Sr. 824.	Sr. 857.	Nachin 756.	Sr. 11.	Nachin 27.		M.E. 202.	M.E. 203.	M.E. 207.	M.E. 208.	M.E. 209.
	M.P.	C.	191	180	190	190	205	D.	200	194	194	194	194
	M.Y.		18.5	12.1	16.9	18.3	13.6		23.3	25.1	21.7	24.7	23.7
G.M. = 15.9.,		S.D. =	1.6.,	M.S.D. = 2.3.				G.M. = 23.7.,		S.D. =	1.7.,	M.S.D. = 2.3.	
			F.S. 1.	F.S. 5.	F.S. 9.	M.P. 148.	M.P. 149.		F.S. 28.	F.S. 36.	F.S. 64.	F.S. 67.	F.S. 34.
	M.P.	E.	186	189	180	195	195	F.	200	200	206	200	217
	M.Y.		22.5	17.	12.7	20.1	19.5		20.8	24.5	23.7	21.9	26.1
G.M. = 18.3.,		S.D. =	1.9.,	M.S.D. = 2.7.				G.M. = 23.4.,		S.D. =	1.7.,	M.S.D. = 2.3.	
			F.S. 39.	F.S. 48.	F.S. 55.	F.S. 71.	F.S. 14.		S.K. 36.	S.K. 1.	S.K. 6.	S.K. 68.	
	M.P.	G.	222	247	222	222	248	H.	238	235	241	241	
	M.Y.		27.4	29.4	28.5	28.4	24.8		23.5	25.8	26.9	25.6	
G.M. = 27.7.,		S.D. =	2.12.,	M.S.D. = 3				G.M. = 25.4.,		S.D. =	1.7.,	M.S.D. = 2.7	

Table II. (*continued*).

Station.		Square	Strains					Square	Strains				
			S.K. 36.	S.K. 48.	S.K. 52.	S.B. 15.			S.K. 36.	S.K. 371.	S.K. 146.	S.K. 20.	
Titi Serong.	M.P.	J.	235	238	238	241		K.	238	241	241	241	
	M.Y.		28.8	31.6	28.5	27.			26.2	27.7	30.1	25.1	
G.M. = 29.,		S.D. =	1.4.,	M.S.D. = 2.3.				G.M. = 27.3.,		S.D. = 2.3.,		M.S.D. = 4.	
			S.B. 15.	Radin 13.	S.K. 48.	S.K. 36.	Radin 4.		Siam 76.	Radin 2.	M.E. 203.	Nachin 66.	Siam 29.
Kuala Kurau.	M.P.	A.	234	204	234	234	219	B.	175	191	175	184	175
	M.Y.		21.8	17.9	25.2	24.8	20.5		20.2	21.7	15.4	16.3	16.9
G.M. = 22.,		S.D. =	2.3.,	M.S.D. = 3.5.				G.M. = 18.1.,		S.D. = 2.32.,		M.S.D. = 3.4.	
			R.S. 17.	R.S. 24.	R.S. 18.	R.S. 17.							
	M.P.	C.	171	171	171	171							
	M.Y.		18.1	11.9	19.5	16.1							
G.M. =16.4.,		S.D. =	2.57.,	M.S.D. = 4.2.									
			Radin 2.	Sr. 824.	R.S. 17.	Nachin 8.			Nachin 66.	Nachin 27.	Nachin 10.	Siam 76.	Siam 29.
Selinsing	M.P.	A.	215	201	186	197		B.	204	197	202	195	195
	M.Y.		13.6	14.7	12.	13.5			13.5	9.1	16.2	12.4	16.1
G.M. = 13.4.,		S.D. =	1.02.,	M.S.D. = 1.74.				G.M. = 13.6.,		S.D. = 2.03.,		M.S.D. = 2.9.	

Table II. (*continued*).

Station		Square	Strain				Square	Strain			
			Siam 29.	Siam 76.	Nachin 66.	Radin 2.		M.E. 203.	Sr. 824.	Sr. 875.	R.S. 17.
Briah	M.P.	A.	177	177	190	190	B.	179	183	178	165
	M.Y.		15.8	13.4	14.4	10.8		15.5	12.1	10.3	11.4
G.M. = 13.6., S.D. = 1., M.S.D. = 1.7.							G.M. = 12.3., S.D. = 1.5., M.S.D. = 24.				
			Siam 29.	Nachin 66.	Siam 76.	N.E. 203.		R.S. 7.	R.S. 17.	R.S. 18.	R.S. 24.
Bukit Gantang	M.P.	A.	194	194	193	193	B.	183	183	183	183
	M.Y.		21.6	19.5	24.5	23.7		18.7	15.9	21.2	18.8
G.M. = 22.3., S.D. = 1.5., M.S.D. = 2.4.							G.M. = 18.6., S.D. = 1.6., M.S.D. = 2.7.				
			Radin 2.	Radin 4.	Radin 7.	Radin 13.		S.B. 15.	S.K. 36.	S.K. 48.	S.K. 68.
	M.P.	C.	194	194	193	193	D.	208	209	209	209
	M.Y.		24.1	27.9	28.8	23.5		28.4	29.5	28.5	28.1
G.M. = 26.5., S.D. = 1.3., M.S.D. = 2.3.							G.M. = 28.6. Not Analysed. (1)				

Table II. (*continued*).

Station		Square	Strain				Square	Strain				
			Siam 29.	Siam 76.	Nachin 66.	Nachin 10.		M.E. 203.	Sr. 824.	Nachin 756.	Radin 4.	Radin 2.
Talang	M.P.	A.	184	184	180	179	B.	176	173	169	193	190
	M.Y.		23.2	21.3	20.3	20.4		22.	18.9	19.7	17.3	19.1
G.M. = 21.4., S.D. = 1.36, M.S.D. = 2.3.							G.M. = 19.5, S.D. = 1.58, M.S.D. = 2.5.					
			R.S. 17.	R.S. 24.	R.S. 18.	R.S. 7.						
	M.P.	C.	177	177	175	174						
	M.Y.		17.	18.4	10.4	10.7						
Not Analysed (2)												
			S.K. 1.	S.K. 48.	S.B. 15.	S.K. 36.		Radin 4.	Radin 13.	Sr. 824.	Radin 2.	
Bruas	M.P.	A.	209	209	209	209	B.	196	196	192	192	
	M.Y.		16.	16.2	14.4	14.6		6.8	13.7	8.4	6.2	
G.M. = 15.3, S.D. = 2.82, M.S.D. = 4.8.							Not Analysed (3)					

Table II. (*continued*).

Station		Square	Strains				Square	Strains				
			Nachin 66	Siam 76	M.E. 203	Siam 29						
Bruas	M.P.	C.	185	185	185	185						
	M.Y.		13.9	13.3	12.9	13.7						
	G.M. - 13.5,		Not analysed (4)									
			S.B. 15	S.K. 68	S.K. 36	S.K. 48		R 2.	Nachin 66	Siam 29	Siam 76	
Lenggong	M.P.	A.	197	196	198	198	B.	174	173	174	173	
	M.Y.		22	22	25.5	19.4		28	20.2	18.3	17	
		Not	analysed (5)					Not	analysed (6)			
			M.E. 202	M.E. 210	M.E. 208	M.E. 203						
	M.P.	C.	177	177	177	177						
	M.Y.		28.4	32.8	28.6	27.5						
	GM. - 29.3.		S.D. - 2.26.,		M.S.D. - 38							

(1). Differences not significant.
(2). R.S. 17, and R.S. 24 obviously better than R.S. 18 and R.S. 7.
(3). Yields vitiated by pest attack.
(4). No significant difference.
(5) and (6). Yields vitiated by crop losses due to lodging.

Sr. = Serendah. M.E. = Mayang Ebos.
F.S. = Foundation Stock. M.P. = Milek Puteh.
S.K. = Seraup Kechil. S.B. = Seraup Besar.
R.S. = Radin Siak.

Cultural Experiments.

For the third consecutive season an experiment has been conducted at Talang Experiment Station designed to ascertain the comparative effect of the following three systems of cultivation :—

(*a*) Vegetative growth cut down with a *tajak* (an instrument consisting of a heavy cutting blade attached to a handle which cuts vegetation at or just below ground level and used when the land is flooded) and then rotted down.

(*b*) Land cultivated with a mattock or digging hoe locally termed *changkol*.

(*c*) Land ploughed with the local implement and then puddled with the local hexagonal roller.

Yields to date indicate no advantage for any one system. Circumstances made an ideal lay-out impracticable and it is hoped that it will be possible to conduct a better laid out experiment at Sungei Manik Experiment Station when opened.

Conditions, mainly in relation to drainage, which are peculiar to Krian, have caused the adoption in that District of methods of cultivation which would be considered unorthodox in other centres of rice production. Opportunity has been taken to test these against the more usual practices.

Experiments were laid down at Titi Serong and Briah with a view to testing the practicability of employing dry or semi-dry nurseries under Krian conditions. There were three treatments of 1/40th acre plots with four replications, the treatments being as follows :

(*a*) Wet raft (*rakit*) nurseries with multiple transplanting, the common practice in Krian.

(*b*) Dry or semi-dry nurseries sown at the same time as (*a*) but transplanted directly to the field.

(*c*) Dry or semi-dry nurseries sown thirty-two days later than (*a*) and (*b*) and with direct transplanting timed to coincide with the final transplanting of (*a*).

Details of results are given in Table III.

No significant results were attained as between treatments, but in so far as the season under review is concerned, the following points were established :-

(*a*) Ordinary nursery methods and direct planting into the field therefrom (as distinct from the *rakit* nursery method and several transplantings) are practicable in Krian.

(*b*) The maturation period of a strain varies with conditions even in the same locality.

(*c*) Several transplantings are not necessary in Krian to induce grain formation. Reference to the following table will show that padi transplanted direct from the nursery gave as high a yield as that subjected to several transplantings. Briah figures are less reliable than those from Titi Serong owing to rat damage sustained at the former.

This applies more especially to treatment (*b*) at Briah.

The experiment will be repeated at both Stations during the current season (1934-35).

Table III.

Comparison of Wet and Dry Nurseries.

Type of Nursery	Station					
	Titi Serong			Briah		
	Mat. period in Days.	lbs per 1/40th acre	Percentage of G.M.	Mat. period in Days.	lbs per 1/40th acre	Percentage of G.M.
A. Wet raft (rakit) nurseries with multiple transplanting. The common Krian practice ...	230	72.9	95	215	46.4	105
B. Dry or semi-dry nurseries sown same time as A. but transplanted directly to field ...	230	78.1	102	209	41.2	93
C. Dry or semi-dry nurseries sown 32 days later than A & B. Transplanted directly to field at same time as final transplanting in A. ...	204	78.6	103	193	48.6	110
General Mean ...		76.5	100		44.1	100

Effect of Bunds on Yields.

In parts of Krian where the vegetative growth during the fallow season between crops is heavy, it is customary only partially to rot the cut vegetation in the field and then to remove the larger portion of it to the bunds separating the fields. Thus, such bunds receive a yearly addition of partially rotted vegetation so that the larger portion of the material composing it is decaying vegetation resembling in appearance well rotted farmyard manure. Continuous detrition from this results in a gradual slope from the bunds towards the middle of the field, though the difference in level between the middle and edge of the field probably never exceeds six inches.

Under such conditions it is reasonable to suppose that heavier yields due to increased soil fertility will be obtained near the bund; that from the bund towards the middle of the field there will be a decreasing fertility curve, and that this curve will be reflected in crop yields. Such a curve is indicated by the vegetative growth of the crop, and that it would also similarly appear in crop yields has been the general assumption.

Recent manurial experiments have clearly shown, however, that increased vegetative growth is often not accompanied with increased grain production.

A harvesting experiment intended to give an indication as to how far bund proximity affected yields was conducted. Twenty-five lines of plants running parallel to a bund were reaped separately and their yields recorded. This was duplicated for another twenty-five lines running parallel to the same bund. Line 1 in each case was nearest the bund and line 25 furthest from it, being distant 24 feet. Yields recorded show a distinct decrease with distance from bund. The yields obtained, arranging the lines in groups of five, are shown in Table IV.

Table IV.
Effect of Bunds on Yields.

Block A.		Block B.	
Lines	Yields in lbs.	Lines	Yields in lbs.
1—5	17.1	1—5	16.4
6—10	12.4	6—10	11.9
11—15	11.4	11—15	11.
16—20	9.3	16—20	8.1
21—25	7.8	21—25	7.2

The above results are strikingly confirmed by a very definite gradient for columns exhibited in certain varietal trial Latin Squares at Titi Serong. The squares examined in this connexion were situated with one of their sides at distances ranging from 8½ to 33 feet from the bund.

Other Investigations.

Palatability and Milling Qualities of Rice.

The desirability of obtaining information regarding the palatability of the high yielding pure strains isolated by the Department and on their milling qualities has become increasingly recognised and has received some attention. On the question of palatability, tasting trials conducted during the past few seasons have shown that whilst a few strains are fairly generally recognised as of poor eating quality, opinion regarding the majority varies considerably with the locality and with the nationality and circumstances of the taster.

One of the strains that is generally recognised as of poor eating quality is Radin 7, and this fact militates against this strain becoming popular with cultivators, although in many trials it has proved to be the heaviest yielder of all the Radin pure strains so far isolated.

The planting programme for the Perak Padi Experiment Stations and Test Plots for next season has included provision for producing sufficient padi of a number of the more important pure strains with a view to conducting milling tests with them at Bagan Serai Mill. The strains concerned are :—Seraup 15, 36, 48; Radin 2, 4, 7; Siam 29, 76 and Mayang Ebos 203.

Kedah.

Telok Chengai Experiment Station.

The padi season at the Telok Chengai Station was a good one in 1933-34. The rainfall was well distributed and little damage was done by pests and diseases. Heavy rains accompanied by strong winds, however, occurred at the beginning of January, 1934, when all the varieties of padi were in ear, and proved a severe test of the strength of the straw of the different strains.

The local and Krian selections withstood the wind and rain remarkably well as also did the newly-introduced Malacca selection Siam 76. The Malacca Nachin 66 lodged completely. The Radin Siak selections from the same source lodged partially, and of these, Radin Siak 7 was the least affected.

Except for showers at the beginning of the harvest the weather later was fine and dry.

Of the new selections tested, Siam 76 and Radin Siak 7 are likely to prove of value locally.

The yields as a whole were higher than in any previous season. Of the fifteen strains which yielded at the rate of over 500 gantangs per acre, ten were local selections; four were from Malacca and one from Krian. The highest yields were obtained from one Malacca padi, Siam 29, and two Kedah ones, *viz.* Reyong 20 and Radin China 4; these returned 623, 622 and 620 gantangs per acre respectively. Owing to the prolonged wet season the Krian long-termed varieties of padi, but more especially Seraup Kechil 48, gave higher returns than were usual at Telok Chengai. As the varieties were grown in single plots of unequal dimensions situated in different parts of the Station, the yield-results cannot be compared by the usual statistical methods in order to ascertain whether the high yields of certain of the selections were significant; the trials, however, apart from their usefulness in providing seed for distribution, have served to indicate the general field and yield characters of the varieties under local conditions.

Padi Test Stations.

In addition to the Experiment Station at Telok Chengai, Test Stations have been maintained in the chief padi-growing districts in the State, both for the purpose of experimentation, and to serve as centres for the multiplication of selected strains which have demonstrated superior qualities under local conditions.

At all Stations a good season was experienced, except at Salak Kanan where deep water checked growth and adversely affected yields in several plots.

Lenggor Test Station.

At this Station, observations and yield returns from Siam 29, Nachin 10 and Serendah 824, which were quadruplicated in 1/45th acre plots, confirmed results obtained from a Latin Square experiment in which these varieties were tested against a popular unselected local padi, To Seman, in a varietal-cum-manurial experiment. As a result of these tests, Nachin 10 and Siam 29, which exhibited marked superiority, will be used for extensive distribution in the district.

Jitra Test Station.

Tests of the following varieties were made in a checker board planting arrangement of 1/45th acre plots, each replicated five times :—Subang Intan, a round-grained heavy-yielding local variety, resembling Nachin 10, but one that realises low prices, Radin 4 and the Telok Chengai selections Mayang Ebos 80, Radin China 17, Radin Che Nah 79 and Reyong 36.

The highest mean yield was obtained from selected Mayang Ebos 80 with a calculated return of 684 gantangs per acre. All of the others, however, including Subang Intan, produced over 600 gantangs per acre, with the exception of Radin 4, which yielded 398 gantangs per acre only.

Table V shows the relative yields.

Table V.

Relative Yields from Test Stations, Kedah.

Station	Variety	Yield per acre gantangs	Percentage by Volume	Station	Variety	Yield per acre gantangs	Percentage by Volume
Jitra	Radin 4	398	100	Rantau Panjang	Siam 29	581	129
	Mayang Ebos 80	684	172		Nachin 10	574	128
	Radin China 17	623	157		Serendah 824	450	100
	Radin Che Nah 79	614	154		Anak Kuching	510	113
	Reyong 36	623	157		Ibu Kuching	502	112
	Subang Intan	632	159	Pulai	Jarum Mas	529	100
Salak Kanan	Seraup Kechil 36	427	100		Serendah Sg. Dua	597	112
	,, ,, 48	456	106		Reyong 6	728	137
	Seraup Besar 15	472	110		Siam 29	727	137
					Nachin 10	645	122

Owing to the good results recorded from Mayang Ebos 80 it is anticipated that the demand for seed for planting will be considerable. This padi realises full market prices.

Salak Kanan Test Station.

The site of this Station is in an area fairly recently reclaimed from "gelam" (*Melaleuca leucodendron*). The soil is soft and no implements are as yet used for cultivation. Water supplies are abundant and often lead to the submergence of seedlings after planting in low-lying areas. Long-term seven months' varieties are chiefly grown. Results of growing selected Krian strains of "Seraup" have not proved very satisfactory although yields above the average for the district have been obtained. Cultivators do not favour the Seraup varieties, chiefly on account of the lower prices realised when sold to local millers as compared with the longer grained varieties, such as Mayang Ebos and Radin China; also the rices are not considered to be very palatable.

The three selected strains cultivated in a checker-board arrangement of 1/45th acre plots, with ten replications of each were :—Seraup Besar 15, Seraup Kechil 36, Seraup Kechil 48.

The plot yields were very uneven due to deep-water. Seraup Besar 15 gave the highest yields, namely, 473 gantangs per acre, followed by Seraup Kechil 48 with 457 gantangs per acre. The results, which are not significant, are shown in Table V.

It is proposed to discontinue this Station owing to the difficulties encountered with deep-water, and endeavour to open a new station in the district where better water control is available.

Rantau Panjang Test Station.

A good season was experienced at this Station, more especially as no flooding from the Muda River occurred. The local varieties and selected strains cultivated in a checker-board arrangement of plots were, Siam 29, Nachin 10, Serendah 824, and the popular local varieties Anak Kuching 9 and Ibu Kuching. The yields, which are given in Table V, were good for the area.

The superior yielding characters of Siam 29 and Nachin 10 over the local varieties were again demonstrated, and it is likely that the cultivation of Siam 29 will become very popular in the district. For this reason, the number of 1/45th acre plots of Siam 29 grown was twelve as against six replications of each of the other varieties, in order to obtain supplies of seed for distribution.

Pulai.

A small Station was opened along the main road at Pulau near Baling in a district where no selected padi had hitherto been grown, or cultivation and manurial trials made. Five varieties were planted in quadruplicate in plots of 1/45th acre each, of which one half of each plot was planted with seedlings from a dry nursery and half from a wet nursery. Dry nurseries only are

used by planters in the district. Although far larger plants were obtained from the wet nursery there were no significant differences between the yields of the plots planted with dry and wet nursery seedlings respectively.

The varieties planted were Serendah Sungei Dua, Jarum Emas, Reyong No. 6, Nachin 10 and Siam 29. The two former are popular local varieties. The yields recorded were so high, namely over 500 gantangs per relong (700 gantangs per acre) in two cases, that for this class of land they can hardly be accepted without further trial. It can confidently be stated, however, that the selected varieties Reyong 6, Siam 29 and Nachin 10 gave much higher yields than the two local varieties.

The average calculated yields as given are shown in Table V.

The opening of this new Station and the experiments carried out aroused much interest in the district, and demands for seed of Siam 29 and Reyong 6 have already been made.

Malacca.

Varietal Trials.

A Latin Square of standard lay-out, but of 1/360th acre plots instead of 1/120th acre in order to accommodate the block in one plot, was planted to compare the best strains of the different varieties selected to date at this Station, namely Siam 29, Siam 76, Nachin 66 and Nachin 11, together with F. 824 a Titi Serong selection, which has given good yields at Pulau Gadong in the past.

The results showed no significant difference in yield between Sm. 29, N. 66 and N. 11, the highest yielders, but on account of adverse conditions, little weight can be given to this result. The trial will be repeated next season.

Selection Work.

Ear-to-row work was in progress on five varieties, namely Siam, Nachin, Radin Siak, Milek Puteh and Milek Kuning.

Padi Siam. Second series of selections. A popular 7 months Malacca variety. This was the third season of work on this series. Only two lines remained under trial, and this season's results showed that neither was superior to the best of the first series of selections—namely Siam 29. This completes work on this series.

Padi Nachin. Second series of selections. A popular 7 to 7½ months Malacca variety. This was the third season of work on this series. Thirteen lines remained under trial. None were outstanding, but four have been selected for comparison in a Latin Square in the coming season with the best of the first series—namely Nachin 66.

Padi Radin Siak. A short padi 5½ to 6 months commonly grown in Malacca when early maturation is required or water shortage is anticipated. This was the fifth season of work on this variety. Sixteen lines remained

under trial and of these, five will be tested further in a Latin Square in the coming season.

Latin Square trial of Radin Siak and Milek Puteh Strains. Table VI gives a summary of the results obtained from a Latin Square of eleven of the lines under trial.

Table VI.

Pulau Gadong Experiment Station, Malacca.

Summary of Results from Radin Siak (R.S.) and Milek Puteh (M.P.) Lines.

Mean Yield (M.Y.) in Kilos per 1/360th acre; Percentage of General Mean (P.G.M.); General Mean (G.M.) in Kilos; Standard Deviation (S.D.) as Percentage of the General Mean; and Minimum Percentage Difference for Significance (M.S.D.).

	Square	Strains				
		R.S. 17	R.S. 24	R.S. 34	R.S. 18	R.S. 7
M. Y.	1	3.4	3.1	3.8	3.1	3.3
P.G.M.		102	93	112	92	98
G.M = 3.3 ,S.D=6.7, M.S.D. = 9.6						
		R.S. 17	R.S. 16	R.S. 100	R.S. 1	
M.Y.	3	2.8	2.4	2.5	2 5	
P.G.M.		109	95	96	99	
G.M=2.5, S.D=6.5, M.S. D. 11.3						
		M.P. 9	M.P. 15	M.P. 12	M.P. 14	
M.Y.	2	3.8	3.4	3.3	3.4	
P.G.M.		109	98	98	98	
G. M=3.5 S.D=7.4, M.S.D.=12.8						

	Square	Strains			
		R.S. 17	R.S. 69	R.S. 9	R.S. 25
M. Y.	2	3.5	3.5	3.0	3.6
P.G.M.		104	104	86	107
G.M. 3.4, S. D. 5.0 M.S. D. 8.7					
		M.P 1	M.P. 8	M.P. 3	M.P. 7
M.Y.	1	2.7	3.7	3.0	3.6
P.G.M.		80	113	95	112
G.M.=3.2 S. D.=0 M. S. D=0.					

Radin Siak 34 is significantly better than any other strain, and Radin Siak 9, 16 and 100 are significantly worse than any other strain. On this and past results a further confirmatory trial next season will be confined to Radin Siak 34, 7, 17, 25 and 69.

Padi Milek Puteh. A 7 months variety commonly grown in the east coast region of Pahang. Third year of selection. Twelve lines remained under trial, and of these, seven will be continued next season.

In the coming season, Milek Puteh 7, 8, 9, 12, 14 and 18 will undergo further trial for yield. M.P. 11, an early maturation strain, is also retained, for inclusion in a varietal trial of early maturing varieties.

Padi Milek Kuning. A 7½ to 8 months variety commonly grown in the coast region of Pahang. Third year of selection. Four lines remained under trial, and of these Milek Kuning 3 was outstanding, and selection on this series is therefore completed.

Preliminary Selection on Padi Serendah.

This is a variety commonly grown in the inland regions of Alor Gajah District, Malacca. It is a heavy yielding, dwarf padi, but owing to the irregularity of ripening, has to be harvested with the *tuai* (a small cutting instrument with which heads of grain are cut singly). The object of selection is to obtain a high-yielding strain of even ripening. About 1,500 single plants were planted out in rows, and from these 200 were selected for further examination, and about 100 will be planted for ear-to-row selection in the coming season.

Observation Lines of Java Padi.

Ear-to-row lines of the Java varieties Tong San, Oerang Oerang and Kar Serang were grown for observation and acclimatisation. They are 6 months varieties in Java, but matured in 14 weeks in Malacca. Growth was weak and yields were poor. Small plots have been replanted for further acclimatisation.

Pahang.

Drought conditions following the establishment of nurseries delayed the preparation of fields and resulted in a somewhat late planting and decreased area under crop. Following the dry period, very heavy late rains fell in May, causing some minor flooding but no appreciable crop damage. Although growing conditions were not favourable, more particularly in areas without water control facilities, satisfactory yields were obtained.

Dong Padi Test Plot.

Seventeen pure strain selections were tested against two local varieties of padi, Gandar and Jambak Bawang, in five four-way standard Latin Squares.

As yields were measured and not weighed, results are liable to be obscured owing to variations in densities of different strains.

Siam 29 again gave the highest yield, and has proved a successful and popular padi among cultivators. As this strain tends to lodge, trials of Siam 76 were made: the latter variety, although possessing a stronger straw, gave a much lower yield, and so far has not justified a preference over Siam 29.

Nachin 10, although a good yielder lodged badly. Nachin 66, which is reported to have much more robust straw, was laid to practically the same extent, and gave a much lower yield.

Of the local varieties of padi, Gandar proved to have a shorter maturation period and an increased yield over Jambak Bawang.

Results from S.K. 36, Radins 2, 4, 13 and Pahit 1 are now fairly constant, so these will not be tested next year. A further trial of the best of the Radin Siak, No. 24, will be made, for although this variety is not very suitable for the Raub District, it may prove eminently suited to the riverine mukims, owing to its short maturation period of 190 days.

Maturation periods of the majority of types were slightly increased, due to excess of water on the land just prior to and during the ripening period.

Table VII gives the maturation period of each strain and results obtained from squares.

Table VII.
Dong Test Plot, Pahang.

Maturation Periods (M.P.) in days. Mean Yields (M.Y.) in gantangs per 1/120th acre and the Comparative Percentage of General Mean (P.G.M.).

Square		Strain				Square		Strain			
		S.K. 36	R. 4	P. I.	J.B.			R. 2	R. 13	M.E. 210	J.B.
A	M.P.	264	250	244	250	B	M.P.	234	252	236	255
	M.Y.	4.38	4.	3.75	3.38		M.Y.	3.25	4.	3.71	3 38
	P.G.M.	113	104	97	87		P.G.M.	91	112	103	95
		S.M 29	N. 66	S.M. 76	N 10			F.S. 875	N. 272	F.S. 12	G.
C	M.P.	231	232	231	231	D	M.P.	194	196	194	234
	M.Y.	5.5	3.81	4.06	4.5		M.Y.	3.69	2.69	3.56	3.94
	P.G.M.	123	85	91	101		P.G.M.	106	78	103	113
		R.S. 7	R.S 17	R.S. 18	R S 24	S.K. = Seraup Kechil. R. = Radin. P. = Pahit. J.B. = Jambak Bawang. M.E. = Mayang Ebos. Sm. = Siam. N. = Nachin. G. = Gandar. R.S. = Radin Siak. F.S. = Foundation Stock.					
E	M.P.	190	190	190	190						
	M.Y.	2.88	2.88	2.94	3.38						
	P.G.M.	95	95	97	112						

From inspection of records, significant differences may be expected to be about 20 per cent.

Temerloh Padi Test Plot.

The lay-out of this Station was not altered to the Latin Square system as topography did not permit. Seven selections were tested against a local Seri Ayer in 1/40th acre plots, each variety being replicated nine times,with the exception of S.K. 36.

Harvesting and planting were delayed somewhat owing to deep water.

Yields returned from the selected varieties were, in all cases, below that from the local Seri Ayer. As a result of a more suitable planting date being adopted the yield from Nachin 27 was very much better than in previous years. The yield from F.S. 875 dropped owing to excess water, and it now appears that this strain is only suited to shallow fields.

The only strains worth further trial are: Nachin 27, F.S. 875 and Radin 2, while the local Seri Ayer has proved fit for selection work. Summarised yields were as follows:—

Table VIII.

Temerloh Test Plot.

Maturation Periods in days and Calculated Yield in gantangs per acre.

Strains	Seri Ayer	Radin 2	N. 27	Radin 13	Seraup Kechil 36	F.S. 875	Radin 7	Radin 4
Maturation periods—days ...	257	241	191	295	309	203	283	310
Calculated yield per acre—gtgs.	399	332	327	304	301	290	266	249

Pekan Test Plot.

Eighteen selections were tested against two local varieties of padi, Seri Ayer and Milek Puteh, in five four-way standard Latin Squares.

Yields were below those for the previous season due to unfavourable conditions at time of harvest, and to the fact that many of the selections were new to the district.

Summarised results are given in Table IX. From these may be deduced the following:—

Square A.—Milek Puteh was significantly better than any of the other three strains which were all approximately equal.

Square B.—Milek Puteh 11 was significantly worse than any of the other three varieties which among themselves were approximately equal.

Square C.—N. 66 was significantly better than the other three strains, while M.E. 210 is nearly—but not quite—significantly inferior to Siam 76.

Square D.—Seri Ayer is significantly better than Serendah 824 and not quite significantly better than F.S. 875.

Square E.—R.S. 24 is significantly better than any of the other three.

Radin Siak 24 and N. 66 lodged slightly but no grain was lost. Padi Pahit proved to be unsuitable for local conditions. Tillering was much below average and may have been due to close planting. This, however, was the usual spacing for the district.

Table IX.

Pekan Test Plot.
Maturation Periods and Mean Yields of Padi.

Maturation Periods (M.P.) in days; Mean Yield (M.Y.) in pounds per 1/120th acre; General Mean (G.M.) in pounds; Standard Deviation (S.D.) in pounds; and Minimum Significant Difference (M.S.D.) in pounds.

Square		Strain			
		M.P. (L)	P.P 1	Radin 2	Radin 13
A	M.P.	235	254	210	245
	M.Y.	11.9	8.1	8.2	8.4
G.M. = 9.1, S.D. = 1.15, M.S.D. = 2.					

Square		Strain			
		M.K. 3	M.K. 2	M.P. 4	M.P. 11
B	M.P.	250	250	230	220
	M.Y.	13.3	12.7	12.5	8.2
G.M. = 11.7, S.D. = 1.86, M.S.D. = .31.					

		M.E. 210	Nachin 66	Siam 29	Siam 76
C	M.P.	225	225	225	217
	M.Y.	7.6	12.5	8.2	9.7
G.M. = 9.5, S.D. = 1.29, M.S.D. = 2.2					

		S.A.	F.S 875	N. 27	Sr. 824
D.	M.P.	195	195	190	210
	M.Y.	8.5	7.4	7.7	6.7
G.M. = 7.6, S.D. = .68, M.S.D. = 1.2.					

		R.S. 24	R.S. 18	R.S. 7	R.S. 17
	M.P.	175	75	175	175
	M.Y.	12.8	9.4	8.5	8.9
G.M. = 9.9, S.D. = 1.39, M.S.D. = 2.4.					

M.P. = Mileh Puteh, (L) = Local, M.K. = Milek Kuning, M.E. = Mayang Ebos, S.A. = Seri Ayer, F.S. = Foundation Stock, R.S. = Radin Siak, Sr. = Serendah, N. = Nachin.

Sungei Blat Padi Test Plot.

Thirteen selections were tested against three local varieties of padi—Chendar, Hemar and Milek Puteh—in four four-way standard Latin Squares.

Little reliance can be placed on the results, as planting dates were unsuitable and the later sown varieties—Milek Puteh and Radin Siaks—were completely destroyed by birds and rats.

Maturation periods of the long term varieties were very much increased as a result of keeping the seedlings in the nurseries too long.

Table X.

Sungei Blat Test Plot.
Maturation Periods (M.P.) in days and Calculated Yield per acre (C.Y.A.)

	Square	Strain				Square	Strain			
		S.K. 36	Radin 2	Radin 13	Chendar		Siam 29	Siam 76	Nachin 66	Hemar
M.P.	A.	343	218	251	243	B.	218	218	218	244
C.Y.A.		285	252	127	435		395	302	337	221
		F.S. 875	Sr. 824	N. 27	M.P.					
M.P.	C.	211	211	211	No crop					
C.Y.A.		170	137	180	,, ,,					

Kelantan.

Varietal Trials.

Central Experiment Station, Kota Bahru.

In the wet rice trials for varieties with a long and medium period of maturation, eleven imported pure strains were tested in standard Latin Squares with a view to the isolation of strains best suited to local conditions. The land selected for the experiment received a dressing of bat guano at the rate of four hundredweights per acre harrowed into the soil on the day prior to the commencement of transplanting. The crop made satisfactory progress, but on nearing maturity, high winds and heavy rains caused a certain amount of lodging. Rats became established under the fallen straw, and were responsible for an appreciable loss of grain.

Statistical analysis was not undertaken but the following table indicates the performance of the strains tested :

Table XI.

Central Experiment Station, Kota Bahru, Kelantan.

Maturation Period in days. Average Yield in pounds per 1/120th acre and Calculated Yield per acre in gantangs.

Strains	Seraup 36	Seraup 15	Seraup 48	Radin 4	Radin 2	Siam 29	Radin 13	M. Ebos 203	Siam 76	Nachin 27	Nachin 6
Maturation period—days ...	183	183	181	178	176	174	174	171	174	174	171
Average yield in lbs 1/120th acre	34.3	30.9	28.5	23.9	22.3	21.8	20.9	19.9	19.7	17.5	15.7
Calculated yield p.a. in gtgs. ...	698	618	570	472	459	436	418	398	394	350	314

Although damage by pests and weather obviated a critical appreciation of the yields from the strains under trial, the behaviour of the first six gives some indication as to their possibilities under Kelantan conditions, and further trials to establish definite superiority will be undertaken.

In trials of short term strains six varieties of padi were under test in standard Latin Square lay-out, and included Acheh, Jambu, Radin Siak 24, Radin Siak 18, Radin Siak 17 and Radin Siak 7. Unfavourable weather conditions on a well-developed and maturing crop caused considerable lodging and much loss of grain. As a consequence of this damage, yields were very irregular and no useful results were obtained.

In view of the importance of dry padi cultivation in Kelantan standard Latin Square trials to test ten varieties were laid down. Damage by birds rendered results unreliable and further trials will be undertaken.

Pasir Puteh Experiment Station.

Trials comprising seven pure strains and eight local varieties of wet padi were undertaken at this Station, but again pest damage rendered results unreliable. Further work on similar lines will be undertaken during the current season.

Selangor.

Varietal Trials.

Kajang Test Plot.

At this Plot Nachins 27 and 756 and Padi Acheh were tested against an unselected Radin Siak in a standard four-way Latin Square.

All varieties made excellent growth under favourable weather conditions, pest damage being negligible.

It was considered that the results did not warrant statistical analysis. The superiority of Nachin 27 was apparent however, with a strong probability of significance.

Further selection of Padi Kelantan and Serendah 824 was undertaken during the season, as was also preliminary selection of two local varieties of padi—Kelantan and Acheh.

Kuang Padi Test Plot.

The following trials in standard Latin Square lay-out were undertaken, Nachin 27 being the standard of comparison common to all trials :—

Square A. Serendah 824, F.S. 875, Nachin 10, Nachin 27.
,, B. Kelantan, Radin Siak, Acheh, Nachin 27.
,, C. Nachin 756, Radin Siak, Acheh, Kelantan, Nachin 27.
,, D. Nachin 10, F.S. 741, F.S. 875, Serendah 824, Nachin 27.

Extensive damage by insect pests and birds masked results to such an extent that critical examination was not undertaken. A further series of trials will be laid down during the current season.

Preliminary selection of two local varieties of padi, Kelantan and Acheh, was carried out.

Negri Sembilan.

In the District of Jelebu, which observes a planting season some three to four months in advance of the remainder of the State, weather conditions at the commencement of the season were not favourable to nursery development or cultural operations in areas where adequate water control was not available. The crop which matured late in the year as a result of these circumstances, was almost completely laid by heavy rains and suffered much loss of grain.

In other Districts favourable conditions were experienced and satisfactory crops obtained.

Jelebu Padi Test Plot.

Owing to various difficulties experienced during the course of preparing the land for planting, the standard trials arranged for this plot were largely abandoned, and a modified programme using short term Radin Siak from Malacca was substituted.

In the single trial laid down for strains with a medium maturation period, F.S. 875, Radin 2, Nachin 10, Radin 13 and Siam 29 were tested against a local Serendah, but owing to early and extensive rat damage, and a particularly wet harvest, results were of no value for critical examination.

In the trials undertaken with the short term Radin Siak, growth and development were satisfactory, and no extensive rat damage was experienced. The maturing crop, however, was exposed to frequent heavy rains during November and December and was completely lodged prior to harvest. From an examination of results, although no significant difference existed between the strains,

some apparent indications of superiority were observed in Radin Siak Nos. 9, 17 and 18 and these will be tried against further selections of similar strains during the 1934—35 season. Owing to loss of crop due to the circumstances already described, variations were too large to warrant statistical examination.

Kendong Padi Test Plot.

Standard trials were laid down as follows:—

(i) Seraup Besar 15, Seraup Kechil 48 and Seraup Kechil 36 were tested against Radin 13.

(ii) Radin 2, Nachin 66 and Siam 29 were tested against a popular local padi known as Serendah Kuning.

(iii) F 874, F 11 and F 28 were tested against the local Serendah Kuning.

In addition a comparative trial of short term Radin Siak selections from Malacca, including Radin Siak 7, 17, 18 and 24 was undertaken.

Owing to the variable nature of the soil on this Plot, the standard series of experiments was carried out in triplicate, one set being on shallow, one on medium and one on deep soils. Unfortunately, the deep and medium soils suffered from severe flooding early in the growing period, while the shallow areas, being adjacent to the overgrown banks of the river, were badly attacked by rats.

Statistical examination of results was not undertaken in view of the damage sustained, but an attempt to obtain more conclusive results from the same series will be made during the season 1934-35.

Province Wellesley.

Bukit Merah Padi Test Plots.

Four standard Latin Squares were laid down to test the following:—

Square A. Long maturing strains.
Seraup 15, 68, 48, and 36.

Square B. Medium maturing strains.
F. 63, Siam 76, Nachin 66, Siam 29.

Square C. Medium maturing strains.
Nachin 756, Mayang Ebos 203, Serendah 824, Radin 13.

Square D. Short maturing strains.
Radin Siaks 17, 7, 18, 24.

Results obtained from the long-term strains indicated no significant superiority of any strain. Owing to lack of uniformity of water distribution it is considered that the land at this Station is not suited to the cultivation of varieties of padi with a maturation period of eight months, as the performance of this type of rice has in the past been only moderate.

In Square B Siam 29, which has consistently yielded satisfactory crops at this Plot, exhibited superiority over Siam 76, but not over F. 63 and Nachin 66. The consistent performance of Siam 29 under the conditions present at

Bukit Merah, which are similar to those of the greater part of Province Wellesley North and Central, together with its attractive appearance and excellent eating qualities makes it a safe and desirable strain for distribution, although it suffers from a tendency to lodge under unfavourable weather conditions.

Among the strains tested in square C., Mayang Ebos 203 achieved significant superiority over the remaining varieties of padi, while Nachin 756 established a clear significant superiority over Radin 13 and bare significance over Serendah 824. As Mayang Ebos 203 and Serendah 824 have not been included in previous critical trials, further work with these strains will be undertaken. The former is a selection from one of the most widely cultivated varieties in Province Wellesley North.

In the square devoted to short term varieties, Radin Siak 17 and Radin Siak 18 were significantly better than R.S. 7 and 24.

Details of above trials are as follows :—

Table XII.

Bukit Merah Test Plot, Province Wellesley.

Maturation Period (M.P.) in days; Percentage of General Mean (P.G.M.); General Mean (G.M.) in pounds per 1/120th acre; Significant Difference as Percentage of General Mean (S.D.); and Minimum Percentage for Significance (M.S.D.).

	Square	Strains				Square	Strains			
		Seraup 15	Seraup 68	Seraup 48	Seraup 36		F. 63	Siam 76	Nachin 66	Siam 29
M.P.	A	216	215	215	218	B	173	171	173	168
P.G.M.		104	90	101	104		99	97	98	106
G.M.=19.9 S.D.=1.0, M.S.D.=17						G.M=22.6 S.D.=5, M.S.D.=9				
		Nachin 756	M.E. 203	SR. 824	Radin 13		R S. 17	R.S. 7	R. S. 18	R S 24
M.P.	C	171	172	173	172	D	159	159	159	163
P.G M.		103	109	97	92		106	95	108	91
G M.=20.0 S.D.=3.2, M.S.D.=6						G.M=17 5 S. D=6.5, M.S.D=10				

Penang

Varietal Trials.

Glugor Padi Test Plot.

At this Plot trials were carried out in standard Latin Squares of the following padis :—

Square A. Long maturation strains.
Seraup 15, 36, 48, and 68.

Square B. Medium maturation strains.
Siam 76, Radin 2, Nachin 66, Radin 4.

Square C. Medium maturation strains.
Serendah 824, Mayang Ebos 203, M.E. 202, Nachin 756.

Square D. Short maturation strains.
Radin Siak 24, 18, 7, and 17.

Of the strains with a long maturation period, Seraup 48 gave significantly higher yields than the remainder. Further trials are indicated with a view to ascertaining whether this superiority can be definitely established over several seasons. Seraup 15 is widely grown in Penang Island under the name "Sakepoy" and if Seraup 48 proves to be a higher yielder it might replace the former to a considerable extent.

Table XIII.

Glugor Test Plot, Penang.
Varietal Padi Trials.

Maturation Period (M.P.) in days; Percentage of General Mean (P.G.M.); General Mean (G.M.) in pounds per 1/120th acre; Significant Difference as Percentage of General Mean (S.D.); and Minimum Percentage of Significance (M.S.D.).

	Square	Strains				Square	Strains			
		Seraup 36	Seraup 48	Seraup 68	Seraup 15		Siam 76	Radin 2	Nachin 66	Radin 4
M.P.	A	233	233	233	233	B	188	188	188	208
P.G.M.		96	112	95	96		93	92	107	108
G.M. = 16.5, S.D. = 6.5, M.S.D. = 10.						G.M.=15.4, S.D.=9.1, M. S. D=16				
		Sr. 824	M.E. 203	M.E. 202	Nachin 756		R.S. 24	R.S. 18	R.S. 7	R.S. 17
M.P.	C	201	201	201	201	D	146/155	146/149	146	146/149
P.G.M.		103	92	114	89		91	110	96	103
G.M. = 15.7, S.D. = 16.8, M.S.D. = 29.5						G.M.=19.3 S. D.=7.6, M.S.D.=13.2				

In square B, R. 4 confirmed the results of the previous season by maintaining superiority over R. 2. It did not, however, gain significance over the the other strains under trial in the same square.

In the medium maturation strains under trial in square C the experimental error was extremely large. None of the differences were significant, though Mayang Ebos 202 was apparently superior to both Mayang Ebos 203 and Nachin 756.

Of the short maturation strains under trial in square D, Radin Siak 18 gave significantly higher yields than Radin Siak 17 and Radin Siak 24. The yields from this square were unexpectedly high, attaining an average equivalent to 393 gantangs per acre.

Results obtained from the trials conducted at Glugor Padi Test Plot are set out in Table XIII.

APPENDIX.

Padi Hybridization Experiments at Titi Serong 1933-34.

The hybridization experiments continued at Titi Serong Padi Experiment Station, Krian, are in the charge of the Assistant Botanist, Kuala Lumpur, but supervision of sowing, planting and growth throughout the season is given by the Agricultural Officer now permanently stationed in Krian.

Selections were made in January 1934 (Season 1933—34) from the F_4 generation ear to row lines of hybrids obtained during the 1929—30 season.

All heterogeneous lines were cut out; then any lines showing weakness of straw, evidenced by a tendency to "lodge" easily, were eliminated.

The best homozygous lines were then chosen, largely by visual observation, as there was little difficulty for the most part in picking out the best of these lines for habit and crop. Where it was not easy to estimate the comparative value of the crop visually, the ears from ten consecutive plants in the centres of the rows were harvested and comparative figures for weight of crop obtained. Consideration was also given to "earliness"; height of plants; type of ears; and type of grain.

The F_2 generation from more recent cross-pollinations was also examined. Plants from the supposed Nachin 27 x Radin 2 cross were found to be homogeneous and like Nachin 27, and were, therefore, discarded as not being "crossed".

The plants from the Siam 875 x Siam 29 had in the F_1 generation given two types of grains. On account of the consequent doubt as to their percentage, a detailed examination was not made; but as both lots of plants were heterogeneous, showing that apparently both were the progeny of some cross-fertilisation, and as certain plants appeared to have stronger straw than the majority, a few plants with strong straw and Siam type grain were selected and ears from each were retained for seed.

The plants from the Radin 2 x Siam 29 "cross" were examined plant by plant in the field.

The type of grain was notable as it all was of a shape similar to Radin 2; no segregation of the more slender typical Siam type was found. (Average dimensions of the two types are: Radin 2, 8 mm. long, 2.75 mm. broad and 2 mm. thick and Siam 29, 9 mm. long, 2.5 mm. broad and 2 mm. thick).

As regards colour of grain, however, segregation was 223 plants with straw-coloured grains to 695 plants with creamy white grains. These figures again approximate very closely to the simple Mendelian ratio, and show white colour to be a simple dominant to straw-colour in padi grains.

The straw character was not so easy to follow on account of the plants being badly lodged near the batas*, but a count showed approximately 140 strong-strawed plants to 600 plants with weak or spreading straw. The only con-

* Batas.—Low boundary walls, composed largely of humus in North Krian.

clusion that can be formed from these figures is that strong straw and weak straw are probably not simple allelomorphic characters.

Fourteen plants with white grains and with strong straw were selected and ears were reaped for seed for the next season.

The grain resulting from the Nachin 10 x Nachin 27 cross-pollinations made in December 1933 were harvested in January 1934; this "cross" was made in an endeavour to combine the high yielding character of N10 with the strong straw of N27. Fifty-four flowers out of the hundred that were crossed had set good grain. These grains were sown in August 1934 but failed to germinate and the seed may have been non-viable, but a more carefully guarded method of sowing was formulated for future occasions.

The artificially cross-pollinated padi flowers have had the tips of the lemua and the palea cut off to enable emasculation and pollination to be done without vitally injuring the flower. This leaves the top of subsequently formed grain protruding and the grain generally somewhat exposed so that it is readily attacked by fungi unless precautions are taken when the grain is brought in contact with moist conditions at sowing.

THE EXPORT CROPS OF THE NETHERLANDS INDIES IN 1933.

Bulletin No. 122 of the Central Bureau of Statistics of the Netherlands Indies.

The total value of agricultural exports in the year under review was Gs. 306,000,000, as compared with Gs. 385,000,000 in 1932 and Gs. 1,237,000,000 in the peak year of 1928. The total volume of these exports amounted to 3,225,331 metric tons in 1933, or 455,591 metric tons less than in the previous year. The crop chiefly responsible for this decline in exports was sugar, the exports of which declined by 493,000 tons. The following crops also shewed a decline in exports by the amount (in tons) stated against each :—gaplek (dried tapioca root), and gaplek meal 84,000, maize 63,000, sago 42,000, coffee 40,000, "krosok" tobacco 16,000, coconut oil 7,800, tea 7,000. On the other hand, the following increases of exports in 1933 over those of 1932 are recorded (in tons) :—rubber 70,000 and latex 5,000, palm oil 31,000 and kernels 5,000, tapioca flour 19,000, pepper 8,500, copra 8,000, copra cake 7,500, kapok 3,500 and kapok seed cake 4,500, groundnuts 4,500, agave fibre 4,300.

Owing to the economic depression, native agriculturists were concerned with the production of foodstuffs for home consumption to a greater extent than usual. This has affected the proportion of total exports derived from native holdings in respect of a number of products : in 1932, 24 per cent. of cocoa exports were native-produced; in 1933, only 2 per cent. were derived from this source; 22 per cent. of tea exports in 1932 were from native grown leaf, whereas in the following year this figure fell to 16 per cent. On the other hand, in 1932, 62 per cent. of coffee and 76 per cent. of tobacco exports were native production, whereas in 1933, these exports increased to 69 and 90 per cent. respectively. Exports of pepper, kapok, copra and coconut oil remain almost entirely native production, while sugar and cocoa are now almost entirely estate production. In the aggregate, the percentage of exports of native produce continues to increase; in the year under review 48.8 per cent. of exports were native and 59.2 estate, as compared with 35.8 and 64.2 per cent. respectively in the previous year.

The share of the Netherlands Indies in total world agricultural exports was fully maintained in 1933. The country produced 89 per cent. of the world exports of cinchona, 82 per cent. of the kapok, 80 per cent. of the pepper, 33 per cent. of the rubber, 33 per cent. of the copra and coconut oil, 19 per cent. of the tea and 16 per cent. of the palm oil and kernel.

Cane Sugar.

The area planted with sugar cane decreased from 166,138 hectares in 1932 to 84,343 hectares in 1933. The total crop of estate-grown cane was 11,512,134

World Production of Rubber.

(tons of 2240 lbs.)

	Production.					Percentage of Grand Total.				
	1929	1930	1931	1932	1933	1929	1930	1931	1932	1933
British Malaya	449,600	445,900	434,857	417,137	459,836	51.93	53.92	53.98	57.95	53.07
Netherlands Indies	258,733	240,210	250,511	209,019	283,246	29.88	29.04	31.09	29.04	32.69
Ceylon	80,500	75,500	61,500	49,500	64,000	9.30	9.13	7.63	6.88	7.39
British India	11,720	10,782	8,472	3,896	4,528	1.35	1.30	1.05	0.54	0.52
British North Borneo	7,381	7,115	6,247	5,379	7,555	0.85	0.86	0.78	0.75	0.87
Sarawak	11,313	10,310	10,451	6,960	10,874	1.31	1.25	1.30	0.97	1.25
Siam	2,900	3,900	2,963	2,231	4,859	0.34	0.47	0.37	0.31	0.56
French Indo-China	10,934	10,289	11,714	14,436	17,191	1.26	1.24	1.45	2.00	1.98
Other growers	5,100	2,100	3,037	2,769	2,641	0.59	0.26	0.38	0.38	0.31
Total of plantation rubber	838,181	806,106	789,752	711,327	854,730	96.81	97.47	98.03	98.82	98.64
Brazil	22,598	17,137	13,320	6,550	9,790	2.61	2.07	1.65	0.91	1.13
Other wild rubber	5,015	3,770	2,575	1,930	2,010	0.58	0.46	0.32	0.27	0.23
Total wild rubber	27,613	20,907	15,895	8,480	11,800	3.19	2.53	1.97	1.18	1.36
GRAND TOTAL	865,794	827,013	805,647	719,807	866,530	100				

metric tons, while 18,566 tons of native-grown cane were purchased by the large estates and milled in the factories. The total factory production of sugar was 1,372,585 metric tons.

Rubber.

The production of rubber in 1933 was 172,202 metric tons from estates and 115,576 metric tons from native holdings, as compared with 150,901 and 61,447 metric tons respectively in 1932. Owing to price improvement, the 1933 exports of native rubber were 88 per cent. greater than in 1932. A number of small re-milling factories were re-opened in the course of the year 1933.

Coffee.

The production of coffee in the Netherlands Indies in the year 1933 amounted to 106,444 metric tons, as compared with 132,673 metric tons in 1932. Of these exports rather more than half was estate production. Of the estate area planted with coffee 93 per cent. is the Robusta type in Java and 89 per cent. in the Outer Provinces.

The Robusta yields per hectare in 1933 were 610 kgs. as compared with 690 kgs. in 1932. Exports were 72,034 metric tons, which is about equal to the average annual exports between 1929 and 1931 but a reduction of 41,765 tons on those of 1932.

Tea.

The planted area increased in 1933; the estate area by 2,140 hectares to a total of 137,844 hectares, the native area by 5,108 hectares to a total of 46,498 hectares. Although the native area continues to increase, the sale of leaf from this source to estates and curing factories continues to decrease. Native tea cultivation is confined to Java. Of the total native area of 46,498 hectares, 43,521 hectares are in bearing.

The production of dry tea from estates was 63,494 metric tons, and from native leaf bought by estates 11,798 metric tons, a total of 75,292 metric tons as compared with 81,937 metric tons in 1932. World exports of tea in 1933 were 385,493 tons of which 71,874 tons (18.65 per cent.) were from the Netherlands Indies.

Tobacco.

The area under cultivation in 1933 was far below normal and production was correspondingly less. The total area under this crop was 129,758 hectares as compared with 141,617 hectares in 1932 and 171,821 hectares in 1931. The total exports in 1933 were 24,918,000 kilograms as compared with 41,188,000 kilograms in 1932 and 45,526,000 kilograms in 1931. The total estate production was 7,848,823 kilograms, of which 5,296,151 kilograms were estate production from native leaf purchased. The quality of the native tobacco is steadily improving, partly due, it is said, to the raising of European tariffs.

Oil Palms.

There are now fifty oil palm estates in the Netherlands Indies with a total area of 72,081 hectares, of which 50,319 hectares are in bearing. Production in 1933 was 22,804,790 kilograms of kernels and 112,153,520 kilograms of oil. As only about 70 per cent. of the planted area is in bearing, further large increases of production are to be expected. The exports in 1933 were 23,100,106 kilograms of kernels and 116,263,614 kilograms of palm oil and palm kernel oil.

Coconuts.

The cultivation of coconuts is predominantly in the hands of small-holders. The total estate area in 1933 was 49,504 hectares, more than half of which is in Celebes and the Moluccas. The area in bearing on estates was 32,537 hectares, which shews that it is still a comparatively new estate crop. Estate production was 29,464 metric tons, including 948 tons bought from natives.

The surplus available for export from native cultivation, after satisfying domestic consumption, can only be calculated by deducting from the copra exports, the figures for imports and for estate exports, all reduced to copra equivalents. For Java this shewed 10,425 metric tons in 1933 as compared with 77,514 metric tons in 1932. The exact extent of native production in Java is unknown. The copra equivalent of the nuts, consumed in local oil mills is estimated at 191,000 metric tons in 1933 as compared with 174,300 metric tons in 1932. Domestic consumption requires 90 per cent. of the output of the local mills, which in 1933 left but 11,596,000 litres of oil for export.

During most of the year, the oil mills paid for nuts prices above parity of copra export quotations, owing to which the export of copra remained small and local consumption of factory oil increased greatly.

An estimate of the Java total production would have to disregard the copra equivalent of the nuts consumed in small native mills and of the nuts used in the fresh state for culinary purposes. With a population of over forty millions, these quantities must be enormous. The Java production in terms of copra in 1933 was 188,600 metric tons as compared with 223,400 metric tons in 1932.

For the Outer Provinces, the export surplus of copra, nuts and oil available after demands of local consumption have been satisfied is known for each region. After deducting estate exports, it amounted to 470,348 metric tons in 1933 as compared with 405,583 metric tons in 1932. These figures include exports to Java and other islands in the Netherlands Indies.

The total exports of coconut products, in terms of copra in 1933 were 502,242 metric tons, the exports in the previous year being 507,656 metric tons. To this total the estate contribution was only 6 per cent.; the situation is therefore entirely dominated by the native produce in excess of the demand for domestic consumption.

Kapok.

Kapok is predominantly a native crop and the cleaning of the fibre from the pods is largely a home industry. There are 131 estates in Java and 31 in the Outer Provinces. These estates also buy and clean native produce.

The exports in 1933 were—in metric tons—fibre 22,643, seeds 17,777, oil 2,423, oil cake 16,447; corresponding figures for 1932 were 19,093, 16,972, 2,167, 11,999.

Pepper.

This crop is almost exclusively grown by natives and Chinese in Sumatra and Borneo. The export surplus in 1933 was 44,189 metric tons, of which 28,493 metric tons were black pepper and 15,696 tons white pepper. Exports in the previous year were 20,242 metric tons of black pepper and 15,932 metric tons of white pepper.

Owing to the low prices prevailing in 1933, upkeep and manuring were greatly neglected and the yield per hectare correspondingly decreased. The large extension of area during the good years 1928 and 1929, however, more than compensated for this decrease in yield per hectare.

Tapioca.

Tapioca is practically confined to Java and is predominantly a native crop. The greater part of the crop is consumed locally. The surplus exported in 1933 included 29,663 metric tons of dried tubers, 17,860 metric tons of dried and ground tubers, 106,807 metric tons of flour (an increase of 18,847 metric tons in 1932), 6,741 metric tons of flakes and siftings and 10,948 metric tons of pearl and seed.

Gambier.

The exports of gambier remained fairly steady in 1933 at 12,812 metric tons, of which 9,444 metric tons were native production. The crop is grown in the Outer Provinces only and Java's large domestic consumption is supplied from this area.

Arecanuts.

Arecanuts are grown only by natives, chiefly in Achin, the East Coast of Sumatra and Java. Exports in 1933 were well maintained at 40,042 metric tons, of which 19,131 metric tons were from Achin, 11,273 metric tons from the East Coast, 6,950 metric tons from Java and 2,688 metric tons from other provinces.

Rice.

The planted area in Java was 3,778,000 hectares, the produce of which is insufficient to satisfy Java's needs. In 1933, Java imported 78,340 tons of rice.

The only islands that regularly produce a surplus for export are Bali and Lombok, and Celebes. The exports from the former are chiefly to Java and those from Celebes to Menado and West Borneo. All the other islands have to import rice from foreign countries. These imports into the Outer Provinces from foreign countries amounted to 260,431 metric tons in 1933.

Maize.

Maize is exclusively a native crop for domestic consumption. In Java three-quarters of the planted area is on dry land and one-quarter on the wet padi lands. The estimated planted area in Java in 1933 was 2,204,000 hectares, producing 2,126,800 tons of maize, of which 78,650 tons were exported. The Outer Provinces exported to Java and foreign countries 32,110 tons in 1933.

Groundnuts.

Exports of groundnuts from the Outer Provinces are small compared with those from Java. The 1933 planted area in Java was 218,000 hectares, producing 160,800 metric tons of decorticated dried nuts of which 37,757 tons were exported. It is to be noted that the export trade has expanded in the past few years; in 1932 it was 32,105 tons, in 1931 18,320 tons, in 1930 18,529 tons and in 1929 26,399 tons.

Sago.

The exports of sago are from the western part of the Archipelago, where the crop is not the chief food supply as it is in the eastern part, notably the Moluccas. The exports in 1933 were 34,014 metric tons, a considerable decrease on the exports of the previous years.

L.A.J.R.

D.H.G.

TWENTIETH REPORT ON NATIVE RUBBER IN THE NETHERLANDS INDIES.*

Prepared by the Division of Agricultural Economy of the Netherlands Indian Department of Economic Affairs at Batavia, Java, and dated 26th November, 1934.

The price of rubber rose slowly during July and August on account of the favourable expectations regarding the results of rubber restriction. In September repercussions followed, since when prices have moved downwards. The average price for Java Standard Sheet in Batavia fell from 23.4 cents per ½ kg. in the second half of August to 19.6 cents in the first half of November. The price of medium blanket amounted on the average to four-fifths that of standard sheet.

The export of native rubber was strongly influenced by the institution and gradual increase of the extra export tax. Furthermore, the raising of the conversion percentages for wet rubber to the dry equivalent influenced exports. In general, the raising of the special export tax was preceded by a large export of rubber in the group concerned. For example, on July 16 a special export tax was instituted for group 1 (dry rubber) amounting to 10 cents per kg. This caused a forced export of rubber during the first half of July, while the raising of the export tax on wet rubber, which came into force on August 1, was responsible for bringing the export of this product to an abnormal height during the second half of July.

The percentage exported as dry rubber ready for the market from the Outer Islands to foreign countries amounted in July to 41.5 per cent. of the total, in August to 44.4 per cent., in September to 34.7 per cent. and in October to 37.0 per cent. This clearly shews the dwindling activities of the reprocessing factories.

The imposition of the special export tax on native rubber resulted in producers and dealers trying to export their wet rubber in a dryer condition, in an effort to evade payment of the full amount of the export tax. For this reason, repeated changes in the conversion percentages were necessary.

The rapid change in the loss by washing of wet rubber points to a modified procedure being used in the preparation of the wet product. In fact, the old method of preparation has virtually been abandoned. The preparation of thin, incompletely dried "cakes" by the use of hand-mangles is already becoming popular, and many such mangles are in use in most of the rubber centres. There is increasing interest in the production of a product that shall be suitable without further handling for the world market. This project is being popularised by an intensive propaganda campaign. Smoked sheet is preferable to unsmoked sheet as the latter is only suitable for direct placing on the world market if it is most carefully prepared and finished. If it is subjected to care-

* Abstract from *Economic Bulletin of the Netherlands Indies.* Vol. II, No. 18, December 1, 1934.

less handling, moulds appear and the sheets must be cured subsequently by smoking. For this reason, propaganda is principally directed towards the production of smoked sheet. To stimulate this movement, certain facilities will be afforded to those interested in the purchase of simple installations, and instruction will be given concerning the preparation, working and distribution of the product.

In the Residency of Banka and its Dependencies and in the free area of the Residency of Riouw and its Dependencies an individual restriction scheme will be started on January 1, 1935, for the native rubber cultivation. A tree census held in these Districts shewed that there are 10,937,761 rubber trees on the island of Banka of which 4,681,358 trees are being tapped or have been tapped in the past. On the island of Billiton there are around 700,000 tapped rubber trees.

In the island section of the Residency of Riouw the provisional report states that there are 5,223,216 tappable rubber trees. In this estimate, tappable trees that have never yet been tapped are not included.

For the institution of individual restriction in this area, the number of tappable trees that any one person possessed was used as the basis. The basis quota for 1935 for Banka and its Dependencies has been calculated at 1,355,446 kgs. dry equivalent; that for the Residency of Riouw and its Dependencies at 3,896,936 kgs.

Preparations are in hand for the introduction of individual restriction in the Divisions of Acheen and Tapanoeli.

In Tapanoeli the results of the census in the two most important Sub-Divisions are already known. In the Sub-Division of Padang Sidempoean 23,051,713 trees have been enumerated, of which 11,317,565 are tappable; in the Sub-Division of Sibolga the total number of trees was 9,834,889, of which 5,427,856 are tappable.

In connexion with the study of the possibility of introducing individual restriction in the large rubber producing districts, the Government has recently ordered a general registration of all rubber lands in the Netherlands Indies. It may be assumed that such a registration will meet with very great practical difficulties and will probably consume much time.

Departmental.

FROM THE DISTRICTS.

Compiled by the Chief Field Officer from Monthly Reports submitted by Field Officers.

The Weather.

December, usually one of the wettest months of the year was abnormally dry throughout the Peninsula. Drought conditions prevailed in practically all centres for the first three weeks of the period.

Remarks on Crops.

Rubber.—Prices have remained steady throughout the period under review. It is reported that the extremely dry weather experienced adversely affected yields, and that to fill coupon requirements small-holders resorted to heavy tapping which was frequently performed twice daily.

In Johore 150 to 200 acres of small-holding rubber was severely damaged by fire at Parit Selangor in the Ulu Pontian district, where the work of clearing up lallang grass and secondary jungle growth was in hand. Fires on badly overgrown estates were also reported from the Batu Pahat District.

Except in Pahang East, where mouldy rot disease made its appearance for for the first time in sixteen native holdings near Beserah, the incidence of the disease was very considerably reduced by weather conditions unfavourable to its development.

Owing to the low price offered for unsmoked sheet in Kelantan there is a tendency to revert to the manufacture of lump rubber.

Padi.—It is now estimated that the total area of padi destroyed by flood in Kedah earlier in the year amounts to 4,458 acres.

In view of the drought experienced during the month it is considered that a further prolongation of unfavourable conditions will have a serious effect upon yields in the late planted areas of Kedah, Province Wellesley Central, Penang, the coastal mukims of Malacca, the Kuantan District of Pahang, Kelantan, and the riverine mukims of Perak and Krian. In the latter area efforts are being made to maintain the water level till such time as the grain has set.

Harvesting is in full swing in Province Wellesley North, the inland Alor Gajah mukims of Malacca, the riverine mukims of Pahang Central and East, the Jelebu, Kuala Pilah and Seremban Districts of Negri Sembilan and the inland Districts of Selangor, in all of which satisfactory yields are reported.

In the Seremban, Rembau and Tampin Districts of Negri Sembilan, very strong north easterly winds prevailed during the earlier part of the month and

laid large areas of padi, more particularly in the neighbourhood of Bongek where practically the whole crop was blown down.

Transplanting and clearing is in progress in the Panchang Bedina area of Selangor. In the northern areas water is scarce owing to construction work on drains necessitating a lowering of the water level. Dry conditions are retarding the progress of the crop and have given rise to a certain amount of damage by mole crickets. The southern portion of the area is adequately supplied with water, and transplanting is well in hand.

Most of the producing areas in the coastal belt of Malacca were visited for the purpose of revising information regarding irrigation facilities and possible improvements for the information of the Drainage and Irrigation Department.

Coconuts and Copra.—The price of copra appreciated during the month, while nut values rose considerably, due partly to the keen competition for fresh nuts between copra manufacturers, but mainly to the incidence of the fasting month, and the approach of Hari Raya Puasa. Copra produced on improved types of small-holding kilns continues to receive satisfactory prices, and the further extension of kilns of this type is being made in most centres of production.

Importation of fresh nuts in large quantities continues to be made from Kuantan, Kelantan and Temerloh to Lipis, and at times from Kuala Lumpur to Raub.

The manufacture of copra in the coastal Districts of Selangor has further declined. Owing to requirements during the fasting month, a brisk demand has existed for fresh nuts throughout the State which has been met from producing centres. An increase in the manufacture of oil has been reported from the Kuala Langat District.

Tobacco.—Areas damaged during the recent floods in the Baling District of Kedah are being planted. Owing to a shortage of leaf, prices have risen to $40 to $45 per picul. A substantial increase in prices for all grades is also recorded from Perak in view of a limited supply.

Fruit.—Light but sporadic harvests of the common kampong fruits such as durian, duku, rambutan, langsat and machang are reported from all States.

Cloves.—The crop in Penang Island is now in full bearing and harvesting is in progress. Dried cloves are being sold to dealers at $38 per picul.

Pineapples.—In Johore and Singapore supplies continue to be limited and factories are only working intermittently. The season is late, but with the dryer and warmer weather conditions now prevailing, ripening should be hastened and supplies become more plentiful during the coming month. Prices for fruit continue to be high and range from cents 55 to $3 per 100 depending upon quality.

With the maturing of young rubber, many holdings in Johore carrying pineapples as a catch crop are being cleared of the plants.

A recent innovation in one Singapore factory is the canning of pineapple cores for export to Canada. The cores are packed in 8 lb. tins and are quoted at $3.75 per case.

A heavy crop of fruit in the Klang District of Selangor is now becoming available for the local factory.

Tuba.—The demand for planting material of this crop from Singapore continues to be maintained. This is more particularly the case in relation to cuttings from the Changi District.

Agricultural Stations.

Unfavourable weather conditions limited planting operations on all stations. General upkeep has been well maintained, and a satisfactory quantity of planting material distributed to small holding cultivators.

At the Tanah Rata Station, Cameron Highlands, 8,305 pounds of green leaf yielded 1,555 pounds of made tea during the month. The mature fields have again shown a falling off in yield which is now regarded as seasonal. Extensive alterations to the factory plant are at present in hand to cope efficiently with an increased crop and reduce manufacturing costs.

Poultry flocks maintained on Stations continue to make satisfactory progress, and afford useful information for a further study of local requirements. Recent importations of pure bred Rhode Island Red birds from Australia for Negri Sembilan and Pahang, arrived in good condition and settled down well. A commencement has been made to re-establish a flock at Kuala Kangsar, and runs and accommodation are also under construction at Selama, Perak.

Garden Competitions.

In Malacca, Negri Sembilan and Johore the judging of school gardens in the annual competition was carried out during the month. The standard in Malacca, although high was not considered to be as good as the preceding year. In Negri Sembilan the outstanding feature was the high standard maintained by some of the more remotely situated schools, while in Johore, although entries were limited, the general standard was good.

Kampong and Home Garden Competitions were judged in Pahang Central and South. Results in Pahang Central were considered to be much better than last year, many gardens being reported to be not only a credit, but of considerable value to the owners. Entries in the Kampong Garden Competition in Pahang South were not encouraging, but a good standard was achieved. Home gardens, however, were well represented and attained a satisfactory standard.

In the Sawah Competition organised in Negri Sembilan only twenty-six sawahs were eligible to compete, owing to disqualification for failure to adhere to the programme of planting dates. The condition of the majority of the sawahs confirmed the opinion previously formed that the inducement of a small

cash prize had a very considerable effect in the improvement of upkeep and management of competing areas.

Temerloh Rice Mill.

The installation of machinery has been completed, and a trial run was carried out during the month. It was found that further adjustments were necessary before the plant could be put into operation. The buying of padi for the mill requirements has commenced, and with the completion of harvest now in hand ample stocks are anticipated.

Poultry Diseases.

An unidentified disease occurred at Gunong in Kelantan during the wet weather towards the end of November. Preventive measures were recommended but the attack rapidly diminished with the advent of dry weather.

An outbreak thought to be caused by diptheretic-stomato-pharyngitis was reported from Gunong Semanggol in Krian, Perak. The infection was confined to one flock of which practically 50 per cent. succumbed.

DEPARTMENTAL NOTES.

Tour of Adviser on Agriculture.

The Acting Adviser on Agriculture, Malay States, visited Temerloh, Pahang, on December 7th and 8th 1934, for the purpose of inspecting the new Government Rice Mill which was nearly ready for a trial run. Provisional arrangements for the supervision and running of the mill were discussed with the Hon'ble the British Resident, Pahang, the District Officer, Temerloh, the Executive Engineer, Temerloh and the State Agricultural Officer, Pahang.

On 8th December the Acting Adviser inspected the Agricultural Station and Padi Test Plot, Temerloh.

Market for *Derris* Root.

The cultivation of *Derris* spp. has received considerable attention during the past year, and the exports of the dried root have increased. Enquiries regarding the purchase of this product have been received by the Department of Agriculture, and it is possible that a market can be found for further supplies.

Planters who have root for sale, or who contemplate the development of land for the cultivation of this crop, are advised to communicate with this Department as introductions may be effected to arrange forward sales or contracts with purchasers.

Leave.

Mr. F. R. Mason, Agricultural Field Officer, returned from leave on 29th December, 1934. He has assumed the duties of State Agricultural Officer, Selangor.

MARKET PRICES.

December 1934.

Rubber.—There was little variation in the price of rubber during December. Spot loose opened in Singapore at 21⅜ cents per lb. and closed at 20¾ cents, the average for the month for Smoked Sheet equal to London Standard being 20.75 cents per lb. as compared with 20.93 cents per lb. in November. The average price in London for December was 6.30 pence per lb. and in New York 12.86 cents gold per lb. as compared with 6.29 pence and 12.91 cents gold respectively in November.

The following table shews weekly prices paid during the month for small-holders' rubber at three centres.

Table I.

Weekly Prices Paid By Local Dealers for Small-Holders' Rubber, December, 1934.

(Dollars per Picul.)

Grades.	Kuala Pilah, Negri Sembilan.				Kuala Kangsar, Perak.				Batu Pahat, Johore.			
	6	13	20	27	5	12	19	26	5	12	19	26
Smoked sheet	24.00	24.63	23.09	22.87	24.03	23.89	23.42	23.00			22.49	
Unsmoked sheet	21.53	21.71	22.31	21.06	21.01	20.82	20.73	20.41	20.00	20.05		19.00
Scrap		14.08	13.85	14.00								10.45

Transport by lorry Kuala Pilah to Seremban 15 cents per picul, to Malacca excluding duty, 25 cents per picul, by rail Seremban to Penang $1.24 per picul, Seremban to Singapore $8.00 per ton.

Transport from Batu Pahat to Singapore by lorry excluding duty, 90 cents per picul.

Transport from Kuala Kangsar to Prai by railway $6.20 per ton.

Transport from Kuala Kangsar to Singapore by railway $10.00 per ton (minimum consignment 5 tons).

At Kuala Pilah the standard deduction for moisture in unsmoked sheet is 5 per cent.

At Kuala Kangsar the standard deduction for moisture in unsmoked sheet is 10 per cent.

Palm Oil.—The following prices for the local commodity were quoted during the month, and show the upward trend of the market.

Table II.

Prices of Palm Oil and Palm Kernels.

Date 1934.	Palm Oil in Bulk, c i.f landed weight Liverpool/ Halifax.	Palm Kernels, c.i.f. landed weight London/ Continent
	per ton	per ton
Nov 30	£15. 0.0	£ 6. 12. 6
Dec. 7	15.10.0	7. 2. 6
,, 14	16. 0.0	7. 0. 0
,, 21	16. 0.0	6. 15. 0
,, 28	16. 0.0	6. 17. 6

Copra.—A marked improvement in the Singapore market was evidenced during December, a strong upward tendency being maintained except for a slight weakening in the middle of the month. The sun-dried grade opened at $3.05 per picul and closed on a still rising market at $3.30, averaging $3.16 per picul for the month, as compared with $2.95 in November. The mixed quality continued to maintain its high value in comparison with the sun-dried grade and averaged $2.91 for the month as compared with $2.70 in November.

Copra cake remained unchanged throughout the month at $1.70 per picul.

Rice.—The average wholesale prices of rice per picul in Singapore during November were as follows :—Siam No. 2 (ordinary) $2.96, Rangoon No. 1 $2.85, Saigon No. 1 (long grain) $2.92, as compared with $3.14, $3.15 and $3.05 in October. Corresponding prices in November 1933 were $3.31, $3.10 and $2.85 respectively.

The average retail market prices in cents per gantang of No. 2 Siam rice in November were :—Singapore 24, Penang 25, Malacca 24, as compared with 26, 25 and 24 respectively in October.

The average declared trade value of imports of rice in November was $3.25 per picul as compared with $3.36 in October and $3.38 in September.

Padi.—The Government Rice Mill, Bagan Serai continued to pay $1.50 per picul for padi and the privately-owned mill maintained its lower price of $1.30 per picul. Prices per gantang ranged from 5 cents to 12 cents in different parts of the country.

Tea.—Boh Plantations tea was quoted for the first time on the London market in November, the price being 11d. per lb. Kedah tea was quoted at 11d. and 10¾d. per lb. during the month.

Average London prices per lb. during November for tea consignments from other countries were as follows:—Ceylon 1s. 1.98d., Java 10.44d., Indian Northern 1s. 0.05d., Indian Southern 11.50d., Sumatra 9.33d. Prices still continued to weaken.

Tuba Root (*Derris*).—The Singapore market was quiet during December. Prices remained unchanged for roots sold on rotenone content, good quality averaging $44 per picul and fair qualities averaging $40 per picul. Roots sold on a basis of ether extract averaged $30 per picul, an increase of $1 per picul as compared with November.

Coffee.—Singapore prices of coffee improved slightly during December but weakened again at the close of the month. Sourabaya coffee opened at $19.50 to $20 per picul, rose to $20 to $21, and closed at $19.50 to $20.50. Palembang coffee opened at $13.25 per picul, falling to $12.75, an average of $13 for the month as compared with $12.94 in November.

Local prices for coffee again appreciated slightly, ranging from $18 to $32 per picul in different Districts according to quality.

Arecanuts.—Average prices per picul in Singapore for December were as follows:—Splits $4.62 to $5.50, Sliced $7.62 to $8.62, Red Whole $5.06 to $6, the price in each range depending upon quality.

The average prices per picul quoted by the Singapore Chamber of Commerce were:—Best $6.08, Medium $5.68, Mixed $5.10.

Gambier.—The price of Block in Singapore weakened during December to close at $5.75 per picul, an average for the month of $6.15, but No. 1 Cube appreciated considerably, closing at $12 per picul, an average of $11.60. The November average prices were $6.75 and $9.50 respectively.

Pineapples.—Prices in Singapore improved slightly during the month. Average prices per case were:—Cubes $3.07, Sliced Flat $2.95, Sliced Tall $3.32. Average prices in November were $3, $2.85, and $3.25 respectively.

Local average prices of fresh fruit per 100 were:—Singapore, $2.50 for large fruits, and $1.50 for small fruits; Johore, 1st quality $2.50 to $3, 2nd quality $1.90 to $2.20, 3rd quality 55 cents to $1.70; Selangor, 70 cents to $4 according to quality, $4 to $12 for Sarawak pines.

Tapioca.—There was no change in the Singapore market during the month, prices continuing at the November level:—Flake Fair $3.50 per picul, Seed Pearl $5.50 and Pearl Medium $5.85.

Sago.—The price of Pearl, Small Fair in Singapore remained unchanged during December at $3.70 per picul, but Flour, Sarawak Fair improved slightly to average $2.31 per picul. November average prices were $3.72 and $2.16 respectively.

Mace.—The Singapore market continued unchanged throughout the month at the November quotations of Siouw $90 and Amboina $60 per picul.

Nutmegs.—The Singapore market weakened slightly during December, average prices per picul being : 110's $25.60 and 80's $26.20, as compared with $26 and $27 respectively for the previous month.

Pepper.—Further heavy buying in London again raised prices, Singapore White closing at $65 per picul and Muntok White at $67, but Singapore Black weakened on poor demand. Average prices per picul in Singapore during December were :—Singapore Black $20.60, Singapore White $63.60, Muntok White $65.60, as compared with $21.25, $62.25 and $64.25 respectively in November.

Cloves.—Prices continued nominal in Singapore at Zanzibar $35 and Amboina $45 per picul.

Tobacco.—Local prices varied considerably according to quality. In Perak a substantial rise in values was reported due to increased demand by local manufacturers; prices per picul quoted were :—1st quality $60, 2nd quality $50, 3rd quality $43. In Kelantan prices ranged from $45 to $70 per picul, while elsewhere the range was from $20 to $48.

The above prices are based on London and Singapore daily quotations for rubber; on the Singapore Chamber of Commerce Weekly Reports for the month and on other local sources of information. Palm oil reports are kindly supplied by Messrs. Guthrie & Co. Ltd., Kuala Lumpur; the Singapore prices for coffee and arecanuts by the Lianqui Trading Company of Singapore, and tuba prices by Messrs. Mackay & Co., Singapore.

1 picul = 133⅓ lbs. The Dollar is fixed at two shillings and four pence.

Note.—The Department of Agriculture will be pleased to assist planters in finding a market for agricultural produce. Similar assistance is also offered by the Malayan Information Agency, 57, Charing Cross, London, S.W.1.

GENERAL RICE SUMMARY*

November, 1934.

Malaya.—Imports during November of foreign rice into Malaya were 46,237 tons and exports 18,197 tons; net imports accordingly were 28,040 tons. Net imports for the period January to November, 1934, totalled 413,344 tons, an increase of 4.5 per cent.†

Of the imports during November, 46 per cent. were consigned to Singapore, 15 per cent. to Penang, 5 per cent. to Malacca, 21 per cent. to the Federated Malay States and 13 per cent. to the Unfederated Malay States. Of the total, 74 per cent. came from Siam, 23 per cent. from Burma, 2 per cent. from French Indo-China and 1 per cent. from other countries.

Of the exports during November, 73 per cent. were shipped to the Netherlands Indies and 27 per cent. to other countries. The various kinds of rice exported were:—Siam 12,065 tons (66.3 per cent.), Burma 4,144 tons (22.8 per cent.), French Indo-China 194 tons (1.1 per cent.), local production 112 tons (0.6 per cent.).

India and Burma.—For the period January to October 1934, foreign exports totalled 1,256,000 tons, a decrease of 24.1 per cent as compared with 1,655,000 tons in 1933.

Total exports of rice and bran from Burma for the period 1st January to 3rd November 1934 were 3,426,348 metric tons, against 2,980,332 metric tons in 1933, an increase of 15 per cent.

It is estimated that for the season 1934-35 the area likely to mature in Burma will be 12,393,200 acres, a decrease of 0.6 per cent. as compared with the final figures for the season 1933-34.

Siam.—Exports of rice from Bangkok during October 1934 were 187,570 tons, making a total of 1,532,681 tons for the period January to October 1934, as compared with 1,358,583 tons in 1933.

Japan.—According to the *Trans-Pacific Journal*, 22nd November 1934, the final estimates of the 1934-35 crop of Japan Proper amount to 7,117,270 tons, a decrease of 28.4 per cent. as compared with the actual crop of the previous season, and the lowest crop since 1913.

French Indo-China.—Entries of padi into Cholon for the period 1st January to 30th November, 1934, totalled 1,471,113 metric tons as compared with 1,034,261 metric tons in 1933, an increase of 42.2 per cent.

Exports of rice for the same period were 1,429,515 metric tons against 1,161,557 metric tons in 1933, an increase of 23.1 per cent.

According to the report of the Saigon Rice Market for November 1934, the market was lively during the first half of the month as the result of im-

* Abridged from the Rice Summary for November, 1934, compiled by the Department of Statistics, Straits Settlements and Federated Malay States.

† It is to be understood throughout the summary that all comparisons and percentage increases or decreases are in relation to the corresponding period of 1933.

portant demands from Shanghai which caused a rise in prices. Less activity was apparent during the second half of the month and prices fell as compared with those of the first fortnight.

Netherlands Indies.—No information is available subsequent to the October summary.

Ceylon.—Imports for the period January to November 1934, totalled 432,253 tons as compared with 398,996 tons in 1933, an increase of 8.3 per cent.

Of the 1934 imports, 13.8 per cent. were from British India, 61.8 per cent. from Burma, anod 24.4 per cent. from other countries.

Europe and America.—Shipments to Europe from the East for the period 1st January to 22nd November, 1934, totalled 1,130,222 tons, a decrease of 5.9 per cent. as compared with 1,201,399 tons in 1933.

Of the 1934 shipments, 34 per cent. were from Burma, 4 per cent. from Japan, 50 per cent. from Saigon, 10 per cent. from Siam and 2 per cent. from Bengal. The 1933 percentages were 47, 2, 43, 7 and 1 respectively.

Shipments from the East to the Levant for the period 1st January to 12th October, 1934, were 26,589 tons, an increase of 13.7 per cent. as compared with 23,389 tons in 1933.

Shipments to the West Indies and America from 1st January to 3rd November, 1934, totalled 166,660 tons as against 141,487 tons in 1933, an increase of 17.8 per cent.

MALAYAN AGRICULTURAL EXPORTS, NOVEMBER, 1934.

PRODUCT.	Net Export in Tons.				
	Year 1933.	Jan.-Nov. 1933.	Jan.-Nov. 1934	November 1933.	November 1934.
Arecanuts ...	20,756	20,086	17,322	2,353	1,936
Coconuts, fresh † ...	100,609†	94,102†	89,787†	7,701†	5,499†
Coconut oil ...	17,568	16,149	23,138	1,436	2,440
Copra ...	110,543	96,966	86,693	10,201	10,066
Gambier, all kinds ...	2,560	2,294	2,026	267	199
Oil cakes ...	9,992	9,089	10,597	716	820
Palm kernels ...	1,983	1,813	2,771	100	147
Palm oil ...	12,101	10,466	15,055	1,219	1,873
Pineapples canned ...	59,582	54,340	61,793	3,069	2,563
Rubber ¶ ...	459,836¶	414,631¶	426,871¶	41,843¶	39,591¶
Sago,—flour ...	7,648	6,034	8,559	2,247	1,928
„ —pearl ...	2,646	2,277	4,494	360	410
„ —raw ...	4,420*	3,917*	6,326*	435*	800*
Tapioca,—flake ...	9,881	9,185	5,592	494	454
„ —flour ...	702*	370*	1,786*	188*	130*
„ —pearl ...	17,297	16,247	14,345	1,679	1,099
Tuba root ...	569½	498	462	62	15

† hundreds in number. * net imports. ¶ production.

MALAYA RUBBER STATISTICS

Acreages of Tappable Rubber not Tapped on Estates of 100 Acres and over, for the Month ending 30th November, 1934.

State or Territory	Acreage of Tappable Rubber end 1933 (*d*)	Estates which have entirely ceased tapping		Estates which have partly ceased tapping (*a*)		Area of Tappable Rubber never been tapped		Total (3) + (5)	Percentage of (9) to (2)
		Acreage	Percentage of (3) to (2)	Acreage	Percentage of (5) to (2)	Acreage	Percentage of (7) to (2)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Straits Settlements :—									
Province Wellesley	44,285	1,128	2.5	7,391	16.7	567	1.3	8,519	19.2
Dindings	7,368	112	1.5	931	12.6	97	1.3	1,043	14.1
Malacca	121,152	371	0.3	14,899	12.3	2,430	2.0	15,270	12.6
Penang Island	1,366	126	9.2	297	21.7	114	8.3	423	30.9
Singapore Island	28,842	2,902	10.0	4,905	17.0	557	1.9	7,807	27.0
Total S.S. ...	203,013	4,639	2.3	28,423	14.0	3,765	1.8	33,062	16.3
Federated Malay States :—									
Perak	253,227	2,736	1.0	32,854	13.0	12,992	5.1	35,590	14.0
Selangor	310,003	3,719	1.2	36,555	11.8	11,216	3.6	40,274	13.0
Negri Sembilan	233,592	5,203	2.2	29,643	12.7	16,797	7.2	34,846	14.9
Pahang	46,712	3,939	8.4	15,687	33.6	10,047	21.5	19,626	42.0
Total F.M.S. ...	843,534	15,597	1.8	114,739	13.6	51,052	6.0	130,336	15.4
Unfederated Malay States :—									
Johore	365,400	9,108	2.5	22,475	6.1	19,424	5.3	31,583	8.6
Kedah (*b*)	126,588	1,798	1.4	28,886	22.8	19,591	15.5	30,684	24.2
Kelantan	25,793	8,641	33.5	2,555	9.9	5,418	21.0	11,196	43.4
Trengganu (*b*)	4,543	Nil	Nil	98	2.2	98	2.2	98	2.2
Perlis (*c*)	1,181	Nil	Nil	266	22.5	266	22.5	266	22.5
Total U.M.S. ...	523,505	19,547	3.7	54,280	10.4	44,797	8.6	73,827	14.1
Total Malaya ...	1,570,052	39,783	2.5	197,442	12.6	99,614	6.3	237,225	15.1

Notes :—(*a*) Area out of tapping on Estates which have partly ceased tapping refers to areas definitely being rested and excludes areas on any tapping round.
(*b*) Registered Companies only.
(*c*) Rendered quarterly.
(*d*) Figures are as reported by estate managers.

Stocks, Production, Imports and Exports of Rubber, including Latex, Concentrated Latex and Revertex, for the Month of November, 1934, in Dry Tons.

State or Territory	Stocks at beginning of month 1			Production by Estates of 100 acres and over		Production by Estates of less than 100 acres estimated 2		Imports				Exports including re-exports				Stocks at end of month		
								during the month		January to Nov. inclusive 1934		during the month		January to Nov. inclusive 1934				
	Ports	Dealer	Estates of 100 acres and over	during the month	January to Nov. inclusive 1934	during the month	January to Nov. inclusive 1934	Foreign	From Malay States & Labuan	Foreign	From Malay States & Labuan	Foreign	Local	Foreign	Local	Ports	Dealers	Estates of 100 acres and over
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Malay States :—																		
Federated Malay States ...	...	12,402	9,721	12,801	131,841	7,368	92,727	Nil	Nil	Nil	Nil	16,635	3,471	164,827	71,138	...	11,786	10,393
Johore ...		1,759	2,609	4,351	41,804	4,760	47,938	Nil	56	Nil	452	1,860	5,521	18,343	72,184	...	2,985	3,169
Kedah ...	...	354	2,390	2,886	30,188	1,233	15,689	Nil	Nil	Nil	Nil	1,613	2,560	16,295	29,722	...	462	2,228
Perlis ...	...	21	15	12	148	31	319	Nil	Nil	Nil	Nil	Nil	34	Nil	465	...	26	19
Kelantan ...	...	242	170	250	2,790	664	7,301	Nil	Nil	319	Nil	113	788	1,093	9,310	...	249	176
Trengganu ...	...	55	50	171	2,424	86	1,210	Nil	Nil	Nil	Nil	Nil	257	Nil	3,634		55	50
Total Malay States	...	14,833	14,955	20,471	209,193	14,142	165,184	Nil	56	319	452	20,221	12,631	200,558	186,453	...	15,563	16,035
Straits Settlements :-																		
Malacca ...	...	3,338	1,075	1,556	15,626	1,953		Nil		4		4,032		36,605		...	3,058	1,056
Province Wellesley	...	1,623	543	570	6,319	169		Nil		Nil						...	1,891	561
Dindings ...	...	58	153	102	1,188	89	27,119	Nil	13,552	Nil	175,173	6,456	Nil	87,663	Nil	...	43	153
Penang ...	3,026	12,081	10	20	140	118		1,519		24,917						4,159	10,634	12
Singapore ...	7,327	42,074	193	233	2,102	141		6,880		170,828		20,431		292,990		4,483	38,648	210
Total Straits Settlements	10,353	59,174	1,974	2,481	25,375	2,497	27,119	8,399	13,552	195,749	175,173	30,919	Nil	417,228	Nil	8,642	54,274	1,992
Total Malaya	10,353	74,007	16,929	22,952	234,568	16,639	192,303	8,399	13,608	196,068	175,625	15,140	12,631	617,786	186,453	8,642	69,837	18,027

TABLE II
DEALERS' STOCKS, IN DRY TONS 3

Class of Rubber	Federated Malay States	S'pore	Penang	Province We'sly D'dings M'cca.	Johore	Kedah
20	21	22	23	24	25	26
Dry Rubber	10,173	34,394	8,727	4,767	1,919	252
Wet Rubber	1,613	4,254	1,907	225	1,066	210
Total ...	11,768	38,648	10,634	4,992	2,985	462

TABLE III
FOREIGN EXPORTS

PORTS	For month	January to Oct. 1934
27	28	29
Singapore ...	33,641	412,389
Penang ...	11,239	136,976
Port Swettenham.	5,771	62,299
Malacca ...	489	6,122
Malaya ...	51,140	617,786

TABLE IV
DOMESTIC EXPORTS 4

AREA	For month	January to Oct. 1934
30	31	32
Malay States ...	32,974	421,718
Straits Settlements	4,228	
Malaya ...	37,202	421,718

Notes:—

1. Stocks on estates of less than 100 acres and stocks in transit on rail, road or local steamer are not ascertained.
2. The production of estates of less than 100 acres is estimated from the formula: Production + Imports + Stocks at beginning of month = Exports + Stocks at end of month, + Consumption, *i.e.*, Column [9] = Columns [15] + [16] + [19] + [20] + [21] + [22] − [4] − [5] − [6] − [7] − [11] − [12]. For the Straits Settlements, Column [9]: figures for Singapore and Penang Islands represent sales or exports as shown by cess paid and for the mainland represent as previously purchases by dealers from local estates of less than 100 acres, reduced by 15 % to terms of dry rubber.
3. Dealers' stocks in the Federated Malay States are reduced to dry weights by the following fixed ratios: unsmoked sheet, 15% wet sheet, 25% scrap, lump, etc., 40%; stocks elsewhere are in dry weights as reported by the dealers themselves.
4. Column (31) represents domestic exports, being net exports from the mainland Labuan and Brunei, plus production as represented by sales or exports in the Islands of Singpore and Penang. Column (32) represents net exports in the absence of any means of calculating domestic exports of the Straits Settlements for the period January to May inclusive. Column (32) includes from June inclusive 182,528 tons domestic exports of which 182,135 tons are debitable to quota under the Rubber Regulation Agreement dated 7th May, 1934, and 393 tons are exports not subject to regulation. (Figures may be subject to minor adjustment.)
5. The above, with certain omissions, is the Report published by the Registrar-General of Statistics, S.S. and F.M.S., at Singapore on 28 December, 1934.

METEOROLOGICAL SUMMARY, MALAYA, NOVEMBER, 1934.

Locality.	Air Temperature in degrees Fahrenheit							Earth Temperature		Rainfall								Bright Sunshine.		
	Means of			Absolute Extremes						Total.		Most in a day.	Number of days.					Total.	Daily Mean.	Per cent.
	A. Max.	B. Min.	Mean of A and B.	Highest Max.	Lowest Min.	Lowest Max.	Highest Min.	At 1 foot	At 4 feet			Amt.	Precipitation .01 in or more	Precipitation, .04 in or more	Thunder-storm	Fog morning obs.	Gale force 8 or more			
	°F	°F	°F	°F	°F	°F	°F	°F	°F	in.	mm.	in.						Hrs.	Hrs.	
Railway Hill, Kuala Lumpur, Selangor ...	89.6	71.9	80.7	94	70	83	74	83.5	84.3	16.31	414.3	3.63	25	20	5	7		115.40	3.85	32
Bukit Jeram, Selangor ...	86.4	71.6	79.0	89	69	82	73	82.3	83.8	10.17	258.3	1.98	22	18				168.60	5.62	47
Sitiawan, Perak ...	87.5	72.6	80.1	91	71	81	75	83.1	84.7	14.12	358.7	2.96	24	19				166.05	5.53	46
Temerloh, Pahang ...	86.8	72.4	79.6	90	70	78	75	83.2	85.2	10.48	266.2	1.87	22	16	3	9		141.90	4.73	39
Kuala Lipis, Pahang ...	86.5	70.9	78.7	89	69	78	73	82.5	83.9	13.29	337.6	2.63	20	16		27		144.10	4.80	40
Kuala Pahang, Pahang ...	83.7	73.3	78.5	87	71	77	76	81.8	84.0	13.29	337.6	2.75	24	19	1			138.95	4.63	39
Kallang Aerodrome, S'pore ...	85.6	74.2	79.9	89	72	78	76	80.2	82.2	12.47	316.7	3.28	24	22	4			127.60	4.25	35
Butterworth, Province Wellesley ...	85.6	73.4	79.5	89	71	79	76	83.2	84.1	15.05	382.3	2.52	22	20	2			169.80	5.66	47
Bukit China, Malacca ...	83.8	73.2	78.5	87	72	81	76	81.2	82.6	9.75	247.7	1.80	24	19	2			138.30	4.61	38
Kluang, Johore ...	86.5	70.9	78.7	91	69	79	73	81.4	82.3	5.94	150.9	1.37	22	20		9		114.60	3.82	32
Bukit Lalang, Mersing, Johore	83.9	71.8	77.9	90	69	77	73	80.3	81.0	10.43	264.9	1.47	26	21	1	3		120.30	4.01	33
Alor Star, Kedah ...	86.2	73.0	79.6	91	69	79	75	84.2	85.0	6.89	175.0	1.60	18	13	3			158.30	5.28	44
Kota Bahru, Kelantan ...	83.9	72.8	78.3	87	69	76	75	81.8	83.9	28.57	725.7	5.74	17	17		1		146.00	4.87	41
Kuala Trengganu, Trengganu	84.0	72.2	78.1	87	70	75	75	80.7	82.4	14.63	371.6	3.35	22	19				154.00	5.13	43
HILL STATIONS.																				
Fraser's Hill, Pahang 4268 ft. ...	72.0	61.2	66.6	76	59	66	63	70.8	71.6	13.13	333.5	2.31	22	22	3	8	1	103.75	3.46	29
Cameron Highlands, Tanah Rata, Pahang 4750 ft. ...	71.0	56.7	63.9	75	50	64	62	69.5	69.7	14.19	360.4	2.30	25	22			1	98.40	3.28	27
Cameron Highlands, Rhododendron Hill, Pahang 5120 ft. ...	69.6	58.3	63.9	74	56	63	60			14.22	361.2	2.67	25	24				105.35	3.51	29

Compiled from Returns supplied by the Meteorological Branch, Malaya.